Journal of Experimental Education

Volume XII | December, 1943 | Number 2

TEACHER CHILD CONTACTS IN NURSERY SCHOOLS

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Investigations of the behavior of young children have largely been made in nursery schools. Reports of such investigations generally dismiss the nursery school situation with a brief statement of the number, ages, intelligence quotients and sex distribution of the children studied and the socio-economic status of their parents. With the exception of such studies as that of L. B. Murphy (14), there is little reference to other factors in the nursery school situation that might have significance for the children's behavior. This tendency to regard nursery school experience as some sort of constant would hardly seem justified, particularly in a country where nursery schools come under no uniform supervision and meet no state standards with regard to the educational programs they offer or the training of the personnel who direct their programs. The time would therefore seem ripe for some systematic study of nursery school environments. Their physical facilities (8) have already been shown to have some influence on the social behavior of the children. That adult methods may also affect children's behavior is indicated in such experimental studies as those of Jack (6), Johnson (9), Keister (11), McClure (12), and Page (15). Investigations of teacher-child contacts (1, 2, 3, 10, 13, 16, 17) have not as yet furnished a very adequate picture because of limitations in the categories recorded, incomplete definition of categories and lack of information as to reliability. Some of these studies have been concerned with verbal contacts only, and some with contacts obtained in only one teaching situation.

In the studies briefly reported in this paper the writers have attempted, (1) to develop a reliable and adequate method of observing teacher child contacts, (2) to compare the type of contacts made in three different teaching situations, yard, playroom, locker and bathroom, (3) to compare the type of contacts made in a younger group with those made in an older group of children, and (4) to compare the type of contacts made in a university nursery school with those made in a W. P. A. nursery school.

[1] Data for these investigations were collected by Gladys M. Gardner, Bettie C. Eckhardt, and Anne D. Prugh in partial fulfillment of requirements for the masters degree, under the direction of the senior author.

Method of Observation

In the preliminary work on this study four staff members of the Institute of Child Welfare nursery school made diary records of teachers' contacts with children in the nursery school. Working in pairs staff members recorded independently the first contact at the beginning of each ten-minute interval during the three hours of the morning program (9–12) for a period of fifteen mornings. At the end of each morning records were compared and an attempt was made to classify each contact. No difficulty was found in classifying contacts in terms of such objective criteria as physical, verbal, visual and spatial. When, however, an attempt was made to classify the methods used by the teacher it became apparent that exact definitions with illustrative cases would be necessary. Therefore a group of definitions with brief illustrations was worked out, check sheets were mimeographed and two of the observers recorded approximately one thousand contacts which were discussed and analyzed by the nursery school staff in weekly staff meetings. As a result of these discussions it became apparent that description of contacts in terms of type and method shed no light on the areas of behavior which the teacher-child contact affected. So a third major category was developed, that of method goals, or area of

behavior affected. These were defined in terms of the content of the contact. Following this modification the original definitions were discussed, redefined and refined until at the end of a four-month period the final definitions and the check sheet below were ready for use.

Types of Contact

Physical contacts include any physical contact between the teacher and child, his clothing or the equipment.

Examples:

C (Child)—The teacher supports a child descending the knotted rope.

E (Equipment)—The teacher holds a ladder in place while the child climbs to the play house roof.

Cl (Clothing)—The teacher assists the child with the straps on his slacks.

Verbal contacts include any verbalization by the teacher to the child and are classified according to accepted grammatical form.

Examples:

D (Declarative)—It is your turn to slide, now, John.

Im (Imperative)—Put the book in the rack.

In (Interrogative)—Which story would you like me to read?

TEACHER-CHILD CONTACTS

Teacher _____ Date _____

Child _____ Time _____

I. *Type of Contact*

Physical _____ C____ E____ Cl____

Verbal _____ D____ Im____ In____ Ex____ S____

Visual _____ G____ F____ BG____

Spatial _____

II. *Methods*

PR____ PC____ PG____ PA____ PF____ PP____

Ex____

S+____r____ C+____r____ R+____r____

S—____r____ C—____r____ R—____r____

D____ Q____ I____ EAR____

III. *Method Goals*

Physical Care_____

Adjustment Routine____ R____ T____ Cl___ W___ TJ___ UE___ PA___ A___ GS___

Motor Development____

Emotional Development____

Social Development____

Mental Development____ L____

F____ P____ S____ B____

R____

Aesthetic Development____ MD____ GA____ PA____ L____

IV. *Situation*

Ex (Exclamatory)—Oh, the blocks fell down!

S (Social Phrase)—Good morning, Jim. Thank you, Tina.

Visual contacts include any overt change in facial expression, or a body gesture made by the teacher.

G (Gaze)—Mary is ready to throw sand at Dee, sees the teacher watching her closely and restrains the impulse to throw.

F (Facial)—The teacher smiles or frowns in response to the child.

BG (Body Gesture)—The teacher points to an object, nods her head, or waves her hand in response to the child.

Spatial contacts include a change in the spatial relationship of the teacher to the child which does not result in a physical or verbal or visual contact.

METHODS

P R *Physical restraint*

Example: A teacher holds a child's arm when it is raised to strike another child, or holds a child who is attempting to run away.

P C *Physical compulsion*

Example: A teacher carries a resisting child to his cot at rest time, or leads a child against his resistance to his locker with his hat or coat.

P G *Physical guidance*

Example: A teacher guides a child's foot into the rings when he is having difficulty in reaching them, or lays her hand over his on the saw handle and guides his movement.

P A *Physical assistance*

Example: A teacher helps a child to move a ladder or a plank, helps him to put on his rubbers, takes a splinter from his finger, turns his sweater right side out.

P F *Physical caress or fondling*

Example: A teacher puts an arm around, strokes or pats a child who is unhappy, lays a gentle hand on a child to gain his attention, returns the child's physical caress or allows a child to take her hand.

P C *Physical chastisement*

Example: A teacher shows a child how it feels to have his hair pulled or to be pushed when he has pulled hair or pushed another child.

Ex. *Example, Demonstration, Illustration or Indication*

Example: A teacher picks up a hammer and shows the child how to hold it, demonstrates how to catch a plank by a cleat, how to soap the hands in washing, how to wipe a paint-brush, points to a chair when the child is looking for a place to sit, sets an example by saying "Thank you."

S+ *Suggestion (positive)* is the teacher's verbal suggestion of an activity in which she uses "You (or we) could, should, may, might, can or let us."

Example: A teacher suggests to a child who finds the wagons all in use: "You could get a wheelbarrow," or at the clay table, "Let us sit here," with the reason, "then the sun won't be in our eyes."

S— *Suggestion (negative)*

Example: A teacher says, "Let's not pound on the play house any more," reason added, "since it is not very strong and might break."

C+ *Command (positive)*

Example: "Both hands on the rail" (implied command 'put both hands on the rail'), when the children are using the rocking boat; or "Wipe your brush, John," with the reason, "then the paint won't run."

C— *Command (negative)*

Example: To a child putting away cookie tins in the spoon box, "Not there, John," with the reason, "because that's the place for spoons."

R+ *Request (positive)*

Example: "Will you take your boat in to your locker?" with the reason, "then you will be able to find it."

R— *Request (negative)*

Example: "Jane, will you please not stand there," with the reason added, "as you are in the way of the swing."

D *Disapproval*

Example: To a child who intentionally knocked over a basket of paper and looked at the teacher, "very silly." To a child ready to put clay in her mouth the teacher shakes her head.

Q *Question*

Example: "Would you like to paint now?" to a child near the easel; or "What do you think?" to a child who asked a question which the teacher believes he can answer himself.

I *Information*

Example: To the child's inquiry on Friday afternoon, "Do we come to school tomorrow?" the teacher replies. "Tomorrow is Saturday. There is no school Saturday. The day after that is Sunday—no school Sunday. After Sunday comes Monday, and all the children come to school." Or "Your hat is on the chair," to a child looking for his hat. Or "The webs on the duck's feet make good paddles for him to swim with."

E. A. R. *Encouraging, approving or reassuring*

Example: A teacher, seeing a timid child hesitate midway up the ladder, says "You are climbing well. Now you can climb to the top." Verbal approval alone is exemplified by a teacher who says "John is driving his wagon carefully." To a child who calls across the yard, "Look, Miss D, how high I am swinging," teacher nods or waves or smiles at child.

Method Goals

1. *Physical care* is defined in terms of the teacher's efforts in administering simple first aid, inspecting the child's nose, throat and skin, adjusting his clothing to temperature, weather conditions and comfort, positional adjusting of child or equipment with a view to affecting temperature, light, ventilation or safety, adding to the child's physical comfort by wiping his nose, chafing his hands, tying his shoe laces, removing sand from his shoes or hair from his eyes, protecting the child from possible danger, reminding him of his toilet need or encouraging him to drink his tomato juice or water.

2. *Adjustment to routine* is defined in terms of the teacher's efforts which seem to lead to the preservation of materials and equipment and to the acceptance of simple rules for the convenience and safety of the group.

Cl *(Care of own belongings)* includes efforts of the teachers leading to the child's recognition of property rights regarding his own and others' possessions in the individual lockers.

T J *(Tomato juice)* procedure includes the teacher's efforts leading to the child's going to the serving table, awaiting his turn, putting his empty glass on the table, wiping his mouth and putting his napkin in the basket.

P A *(Putting away toys)* includes the teacher's efforts leading to the children's helping in putting the toys in their respective storage places at the end of the play period.

R *(Rest)* includes the teacher's efforts leading to the children's getting their blankets from the bins, lying quietly in a prone position on their cots and returning their blankets to the bins at the end of the rest period.

T *(Toilet procedure)* includes the teacher's efforts leading to the child's care of his clothing, the use of toilet paper and flushing the toilet.

W *(Washing procedure)* includes the teacher's efforts leading to the child's rolling up his sleeves, turning on the water, using the soap, rinsing his hands, turning off the water, getting a towel and drying his hands, putting the towel in the basket and rolling down his sleeves.

U E *(Use of equipment)* is concerned with the teacher's efforts in preserving the equipment and is not to be confused with

G S *(Group safety)* which is defined in terms of the teacher's efforts in establishing safety measures for the children, such as: hands on the bar of the rocking boat.

3. *Motor Development* is defined in terms of the teacher's efforts in aiding the child in the development of skill and coordination in the use of the large and small muscles in the manipulation of clothing, yard equipment, and the materials for arts and crafts.

4. *Emotional Development* is defined in terms of the teacher's efforts in fostering in the child an understanding of his own and other's emotions, suggesting a constructive response to his emotion, encouraging the child's change from a dismal to a happy effect, preventing his unproductive frustration, and heightening his enjoyment by showing interest in and appreciation for his undertaking and accomplishment.

5. *Social Development* is defined in terms of the teacher's efforts in helping the child to learn to live with other people. This is accomplished by the teacher's setting an example, defining, suggesting and approving acceptable social behavior, promoting pleasant group experiences and interchange of ideas, cultivating social perception, redirecting or devaluating undesirable social behavior and insuring considerate treatment of animals.

6. *Mental Development* is defined in terms of the teacher's efforts directed toward enriching the child's understanding of the world around him by increasing his understanding and facility in the use of language, stimulating his curiosity in physical, social and biological processes, developing his reasoning, judgment and problem solving, pointing out functions and relationships, and making comparisons and helping him to arrive at conclusions.

L *(Language)* includes efforts of the teacher leading to the child's understanding and use of language.

F *(Facts)* includes efforts of the teacher leading to the child's gaining simple information.

R *(Relationships)* includes the teacher's efforts in pointing out relationships which presumably are of interest to the child.

7. *Aesthetic Development* is defined in terms of the teacher's efforts to stimulate the child's interest, understanding, enjoyment, appreciation, skill and independence in the use of media for creative expression. This is accomplished by the teacher showing interest, giving explanation, suggestion, approval and demonstration of constructive and skillful use of the media employed in music and dance, graphic and plastic arts, and literature.

I. Teacher-Child Contacts in Three Different Teaching Situations

Description of the Nursery School

The Institute of Child Welfare nursery school in which the observations were made is an outdoor school with an enclosed patio and an open yard. Because of the selection of equipment in these areas the children's activities are somewhat specific to each area: active play, running and climbing in the yard; art and carpentry activities, house play, block building, looking at books and resting in the patio; dressing and morning inspection in the locker room; washing and toileting in the bathroom. It therefore seemed advisable to take representative samples of each teacher's contacts in:

1. The open yard.
2. The patio which corresponds to the play room of an indoor school.
3. The locker and bath rooms.

The nursery school is staffed by a head teacher, two assistant teachers who are recent graduates in child development or related fields, and student-teachers scheduled four to each morning. At the time of this study the assistant teachers had been teaching in the nursery school for a period of five months. The student-teachers who were senior students majoring in child development or some related field had spent two mornings a week for one and a half months in the nursery school. The two student-teachers had attended the same course on nursery school education, and had met approximately the same undergraduate requirements as the two assistant teachers.

The thirty children with whom the teachers had contact ranged in age from 2–6 to 3–11, with 3–5 the median of the distribution. The intelligence quotients for the group ranged from 100 to 156, with 120 the median of the distribution. The children were a selected group from a socio-economic standpoint, in that 75 per cent of their parents were college graduates.

The school program which covered the hours from nine to twelve was an extremely flexible informal one. It included a brief inspection of the children by the head teacher, a pause for tomato juice which was served buffet style in the patio at 10:30, and a period for putting away equipment at 11:15. The final half-hour was spent with fifteen minutes in stories and quiet activities and fifteen minutes rest on cots in the patio.

Data

The observations made covered a period of 24 days. During this time two morning's records were made on each of two assistant teachers and two student teachers in each of three situations. The first contact in each five-minute interval between the hours of 9 a. m. and 12 noon was recorded. Contacts totalled 638 in all with 169 in the locker and bath rooms, 234 in the patio and 235 in the yard.

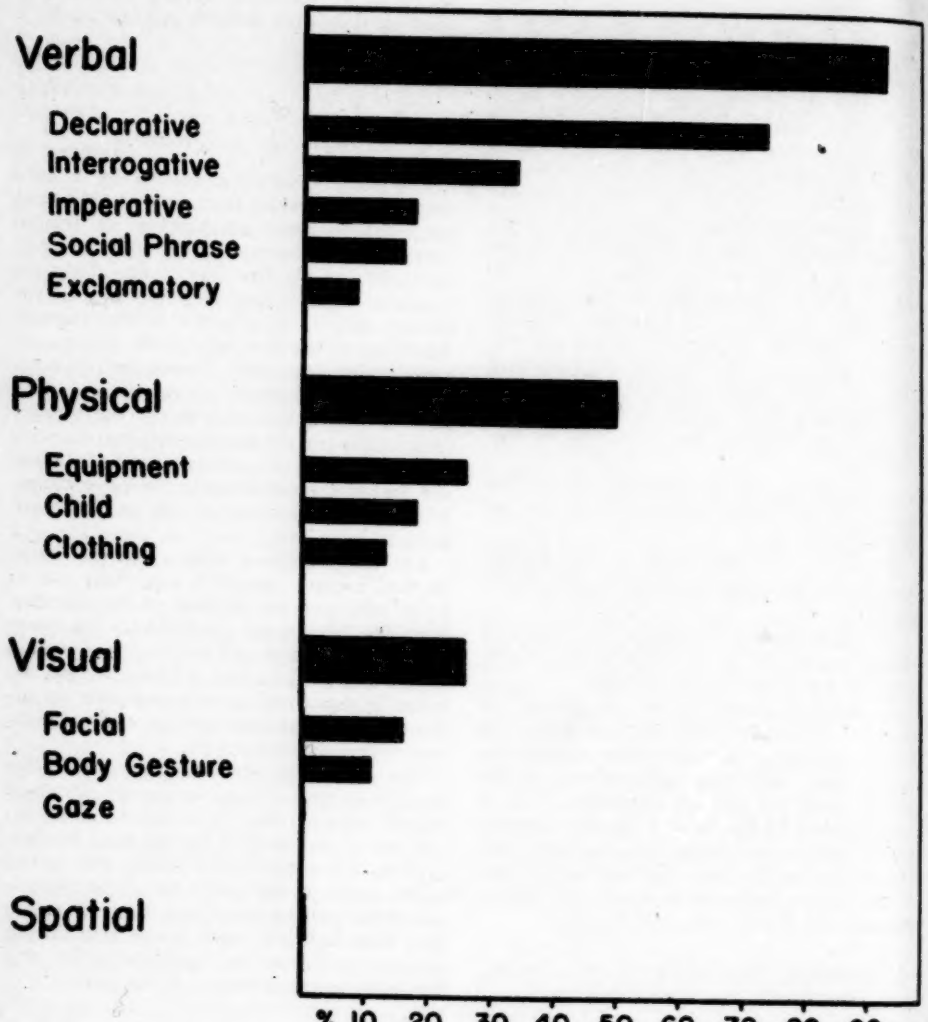

Figure I

Teacher - Child Contacts of Four Teachers
Types of Contact

Reliability

Percentage agreement of two independent observers on 142 observations (42 in the locker and bath rooms, 47 in the patio and 53 in the yard) ranged from 95–100% on the three classifications and the three teaching situations. The amount of preliminary preparation and training required to produce this percentage of agreement raises question as to the reliability of observations of teacher-child contacts made by observers who have not undergone a training period in the method of observation.

Types of contact

As Table 1 and Figure 1 reveal, limiting observation of teacher-child contacts to verbal ones gives only a partial picture of a teacher's activities with the children in a nursery school. The percentage distribution of declarative, interrogative and imperative sentences suggests the type of relationship the teachers had with the children. This was a guiding and informing rather than a dictating and dominating one. The majority of the physical contacts were indirect being with the child's play equipment or clothing. In these contacts as will be seen later, the teacher was giving the child assistance of some sort. Under visual contacts, the changes in facial expression were largely smiles and nods of approval. The gestures were made either in place of words or to reinforce language, or to demonstrate an activity. Purely spatial contacts were apparently somewhat ineffective.

In their teacher training course students had their attention drawn to the merits of minimal contacts as a means of helping children learn to respond to diminished cues and to become progressively more independent of the teacher. Table 1 and Figure 1 therefore represent a certain amount of conscious effort on their part toward discriminating diminishing support.

Figure 2 offers graphic evidence of the need for obtaining representative samples of teacher-child contacts in all the teaching situations of the nursery school day. To an experienced nursery school teacher it will be no revelation that there are significantly more physical contacts in the bath room and locker room than in the yard and patio and that a majority of these contacts involve the child's clothing. Some of the other differences may be peculiar to this nursery school and therefore call for some explanation. The reason for the greater percentage of interrogatives in the locker and bath room is that a child coming in from the play yard is likely to be questioned as to his need. The high percentage of social phrases in this situation results from the morning greetings and noon farewells given the children as they enter and leave through the locker room. This also accounts

TABLE I

TEACHER–CHILD CONTACTS IN THREE TEACHING SITUATIONS, LOCKER AND BATH ROOM, PATIO AND YARD

Situation	Types of Contacts: Locker & Bath Room	Patio	Yard	Total
Total Contacts	169	234	235	638
% Verbal	94	91	94	93
Declarative	71	74	75	74
Interrogative	52	28	26	34
Imperative	23	15	17	18
Social phrase	44	7.3	5.5	16
Exclamatory	9.4	9.0	8.1	8.7
% Physical	63	53	39	50
Equipment	16	38	21	26
Child	24	13	21	18
Clothing	40	6.0	2.1	13
% Visual	31	26	22	26
Facial	23	12	14	16
Body Gesture	8.9	15	8.9	11
Gaze	1.1	.4	0	.4
% Spatial	1.2	.9	.4	.8

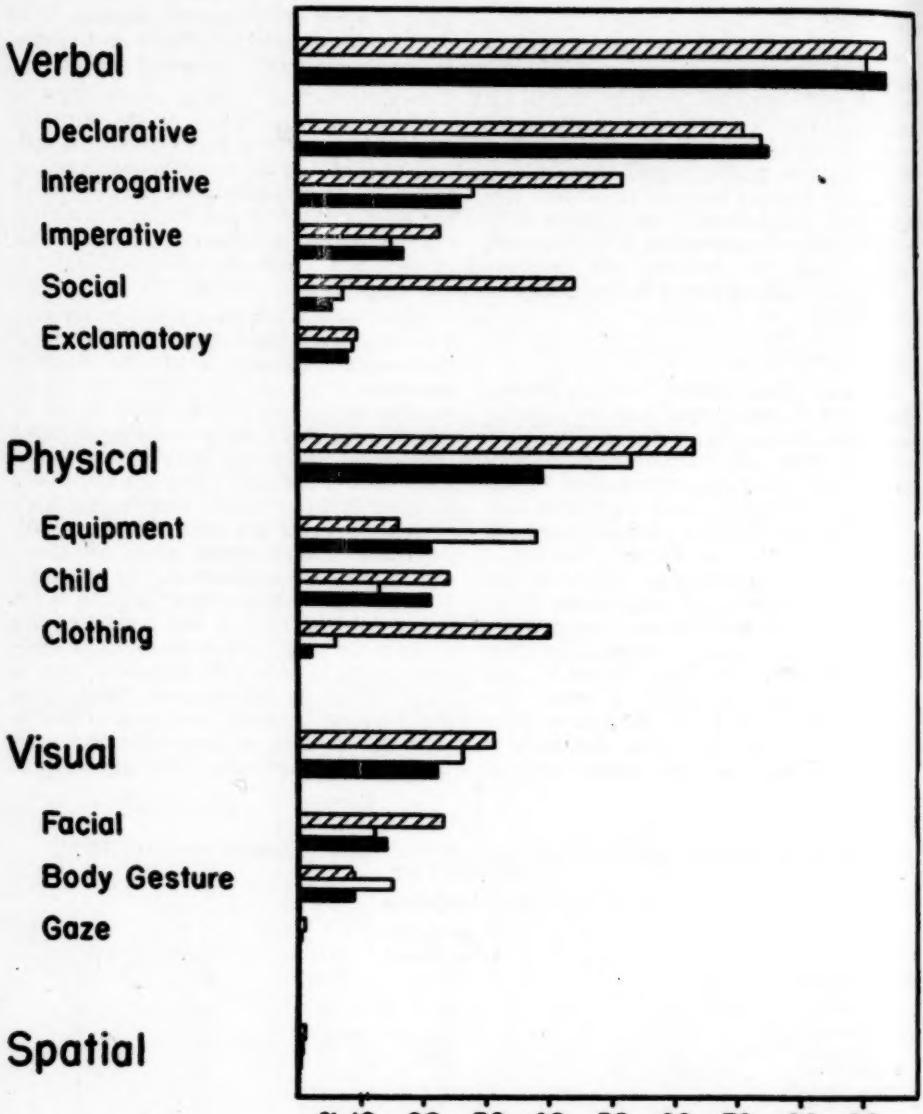

Figure 2

Teacher-Child Contacts in Three Teaching Situations Types of Contact

for the higher percentage of visual contacts and smiles here. The greater percentage of physical contacts with the children in the locker and bath room is due partly to the child's giving his teacher a hug of greeting and partly to her ministrations to children who have tumbled in the yard and come indoors for knee washing and sympathy. The greater proportion of physical contacts with equipment and of body gesture in the patio is a result of the teacher's helping the children to use carpentry tools, scissors and other equipment calling for the development of some skill. Here, too, the teacher often indicates where a piece of equipment may be found by a gesture. During the rest period she sometimes indicates quiet to a child by placing a finger on her lips rather than disturbing the whole group by speaking. A slightly greater percentage of imperatives in the locker and bath room arose from the teachers simplifying her instructions to children trying to manage their own clothing. This gave many of her directions the sentence structure of imperatives though her tone may have been one of persuasion or suggestion.

Methods

Some of the methods used most were foreshadowed in the percentages for types of contacts. What is of interest in Figure 3 and Table 2 is the consistently positive and encouraging nature of the methods used and the negligible percentage of negative, restraining and disapproving methods. Also of interest is the fourth place which commands take after information, positive suggestions and questions. Conclusions from Johnson's (9) and McClure's (12) studies on the effects of different types of verbal instructions on children's behavior are that effective instructions are positive and encouraging rather than negative and discouraging and that suggestions meet with a readier response than commands.

TABLE II

TEACHER–CHILD CONTACTS IN THREE TEACHING SITUATIONS, LOCKER AND BATH ROOM, PATIO, AND YARD

Methods				
Situation	Locker & Bath Room	Patio	Yard	Total
Total Contacts	169	234	235	638
% Verbal				
Information	37	50	51	47
Question	49	27	24	32
Positive suggestion	67	36	31	42
with reason	23	12	7.2	13
without reason	44	24	24	29
Positive command	25	16	18	19
with reason	3.6	3.4	3.4	3.4
without reason	21	13	15	16
Positive request	2.4	.8	0	.9
with reason	.6	.4	0	.3
without reason	1.8	.4	0	.6
Negative suggestion	2.4	.4	.4	.9
with reason	1.2	.4	.4	.6
without reason	1.2	0	0	.3
Negative command	0	0	1.3	.3
with reason	0	0	.4	0
without reason	0	0	.9	.3
Negative request	0	0	0	0
% Physical				
Assistance	54	33	17	33
Guidance	27	16	7.7	16
Petting and Fondling	4.7	3.8	4.3	4.2
Restraint	.6	.4	3.0	1.4
Compulsion	.6	.4	.4	.5
% Verbal and Physical				
Encouragement, approved or reassurance	36	32	30	32
Example	38	19	15	22
Disapproval	1.2	3.4	.9	1.9

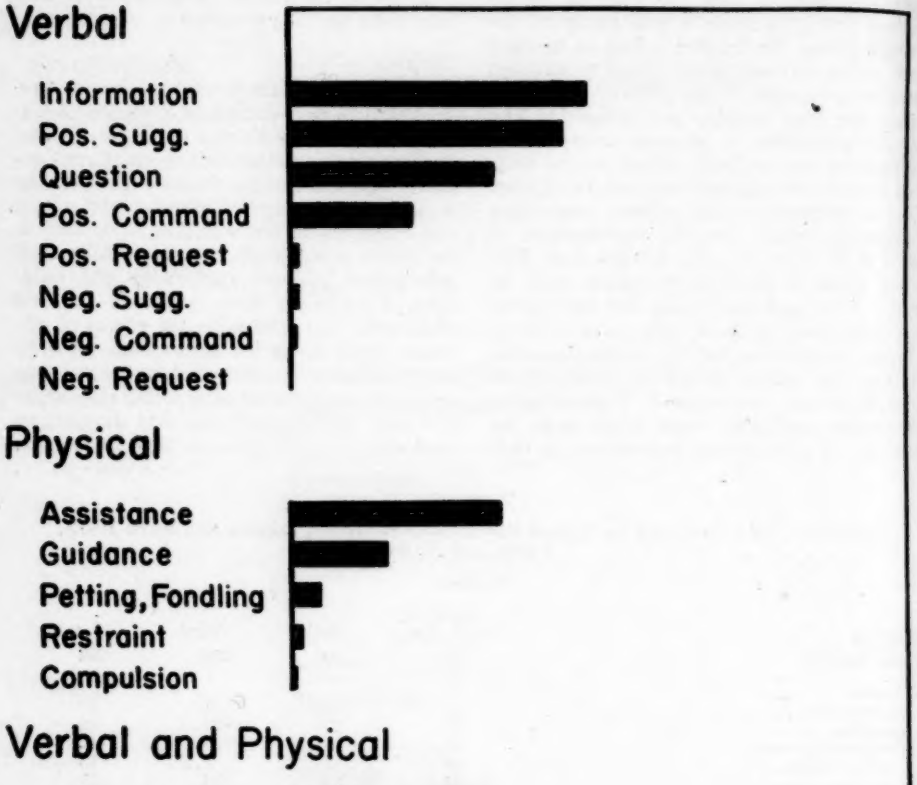

Figure 3

Teacher-Child Contacts of Four Teachers · Methods

The methods used by the teachers in this nursery school were therefore in keeping with their knowledge of methods proved effective in experimental situations. In summary the teachers told the children what to do rather than what not to do, they demonstrated activities, they gave encouragement and approval, they offered information and asked questions to stimulate thinking, they gave the children physical assistance when necessary for their undertakings, and they used physical guidance to give the children the kinesthetic experience necessary for their learning of new motor skills.

Figure 4 offers further evidence that samples of teacher-child contacts are not representative unless they include all the teaching situations of the nursery school day. The reasons for the larger number of questions and the slightly larger number of commands in the locker and bath room have already been given. The greater proportion of suggestions seemed to arise from the teacher's use of question and suggestion in directing a child through the sequence of toileting and washing. Physical assistance, guidance and example given approximately twice as often in the locker and bath room as in the yard and patio, were necessary because of the children's difficulty in manipulating outdoor clothing before toileting and washing. Much of this was due to the type of clothing the children wore. At the time of this investigation there were few ready made play garments on the market that a child under four could manage with any ease at the toilet.

It is of some interest that the use of negative command and physical restraint though negligible was limited almost entirely to the yard. Here the children's activities covered a greater area and were subject to less direction by the teachers. Consequently they sometimes took risks with their own and others' persons that had to be dealt with immediately by physical intervention or a quick negative command. The 3.4 per cent of contacts in the

TABLE III

TEACHER–CHILD CONTACTS IN THREE TEACHING SITUATIONS, LOCKER AND BATH ROOM, PATIO, AND YARD

Situation	Locker & Bath Room	Patio	Yard	Total
Total Contacts	169	234	235	638
% Adjustment to Routine	66	33	29	42
Toileting	34	.9	.9	9.5
Use of equipment	1.8	9.7	4.3	5.6
Washing	0	0	0	5.3
Resting	0	12	2.1	5.1
Care of personal property	12	2.1	1.2	4.5
Group safety	.6	0	12	4.5
Putting away toys	0	2.1	4.3	2.3
Tomato juice	0	.4	1.7	.8
% Social Development	30	6.4	12	15
% Emotional Development	3	10	19	12
% Physical Care	16	12	9.8	12
% None	3	13	13	11
% Aesthetic Development	.6	13	9.8	8.4
Literature	.6	1.2	9.3	4.0
Graphic arts	0	8.1	0	2.3
Music and dance	0	2.1	.4	.9
Plastic arts	0	.4	0	0
% Mental Development	8.3	10	6.4	8.3
Relationship	4.1	5.5	2.5	4.0
Language	1.8	2.9	2.5	2.5
Facts	2.3	2.5	2.1	2.3
Physical science	1.8	3.4	1.2	2.1
Biological science	1.8	1.7	3.0	2.1
Social science	0	0	0	0
% Motor Development	0	9.8	11	7.7

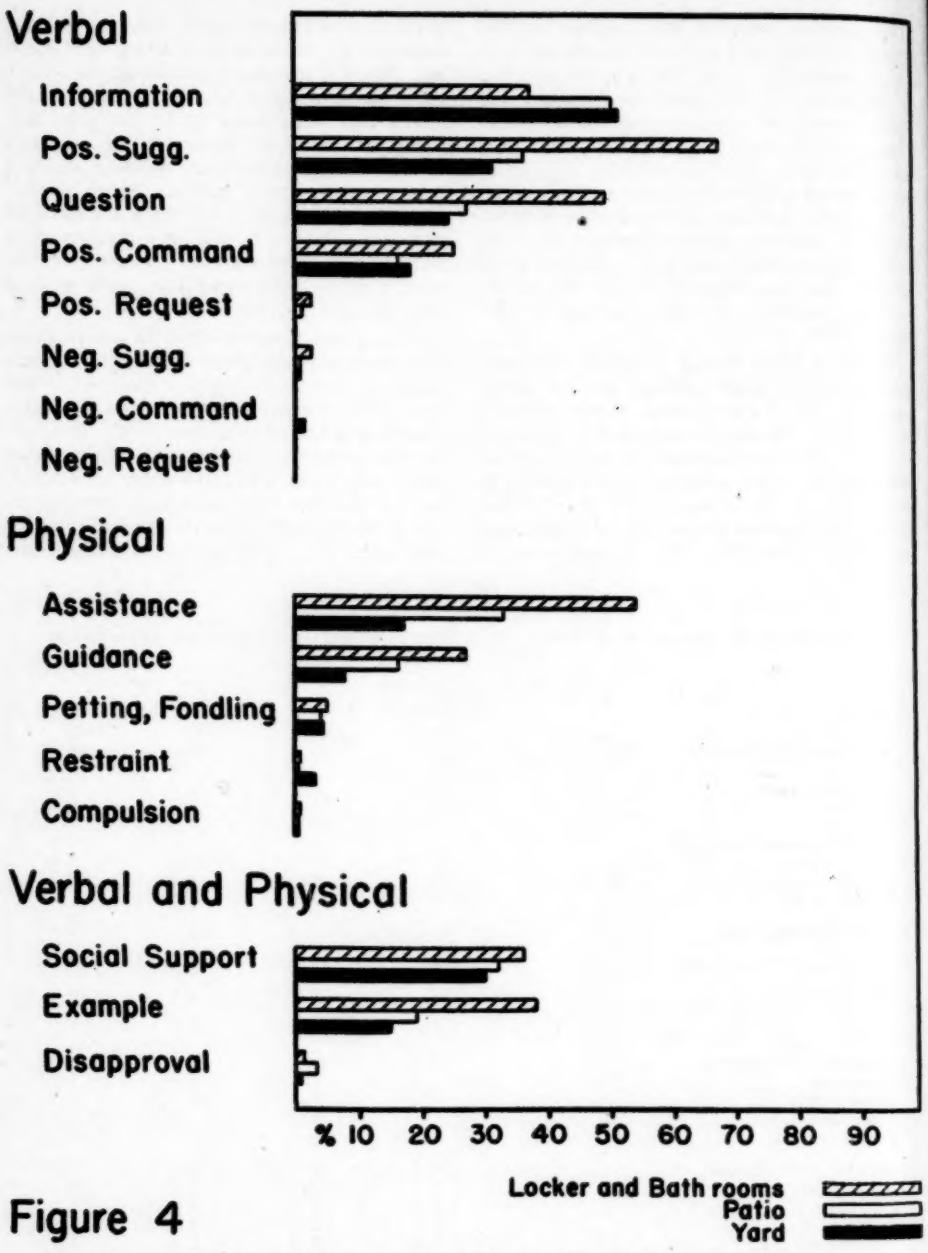

Figure 4

Teacher-Child Contacts in Three Teaching Situations
Methods

patio using disapproval as a method occurred during the rest period when a teacher sometimes shook her head or turned a disapproving glance on a child getting ready to disturb his neighbor.

Method Goals

The percentage distribution of method goals in Figure 5 and Table 3 is offered with the reservation that it represents a classification in terms of content rather than effect. The only claim such a classification has to validity, and this of a relative sort, is the high percentage agreement of six trained nursery school teachers in defining the categories and classifying the contacts. The limitations of the classification are the limitations of these six nursery school teachers' understanding of human behavior. While it was obvious to them that a child who is mentally stimulated by a well directed question or timely piece of information may in consequence be emotionally stirred and physically invigorated they limited their classification of method goals in each contact to the most apparent one, thus reducing subjective interpretation.

The high percentage for adjustment to routine is not surprising when one considers the age of the children, the difference between the home and school environments and the need for having some sort of organization and rules whenever a group of thirty individuals of any age get together. Incidentally the adjustments to routine were also a part of the child's adjustment to living with a group of people, hence possibly a factor in his social development.

The second place which social development took on the list of method goals should be a source of satisfaction to the parents whose main reason for putting their child in nursery school is to have him learn to play with other children. As has already been explained the percentage recorded for emotional development is probably an understatement. Physical care, currently considered by some congressmen and a large section of the public as all that young children require was classified as a method goal in only twelve per cent of the contacts. The eleven per cent for which no method goal classification was made represents the chaff that one is aware of in all

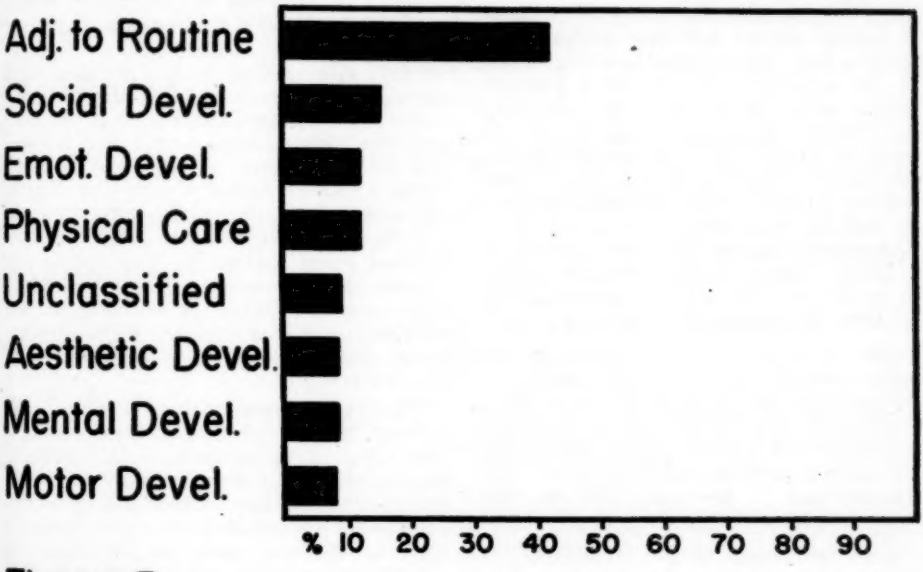

Figure 5

Teacher - Child Contacts of Four Teachers
Method Goals

social intercourse. In most of these cases the teachers acknowledged a child's conversation with a nod or a word without adding anything to his information or understanding and without showing enough interest or enthusiasm to merit classification under emotional development. The somewhat uneven distribution of aesthetic development among the arts seemed to arise from the availability of materials. In an outdoor nursery school this is necessarily somewhat related to weather conditions. With mental and motor development as with emotional development the percentages given are probably understatements. The child's growth of understanding and his development of motor skill are slow gradual processes, whose progressive stages are not always clearly recognizable.

Method goals classified in terms of content are, as shown in Figure 6, necessarily somewhat specific to the three teaching situations. That the percentage for adjustment to routine in the locker and bath room should be twice that in the yard and patio is largely a matter of the type of activities in this situation. This also accounts for the higher percentage for social development. In this connection it should be pointed out that there were qualitative differences in the type of social behavior fostered in the three areas. In the locker room the teacher offered an example in the social forms and courtesies of our culture, in the yard and patio she was mainly concerned with helping children develop some understanding of others' feelings and the social techniques necessary for getting along happily with each other. The restriction of painting, music and looking at books to the patio and group story telling to the yard is reflected in the percentages for aesthetic development in these areas.

The higher percentage for emotional and motor development in the yard was due to the fact that there were literally more sweat and tears in the less directed yard activities and hence more need for teacher aid in helping children respond constructively to their emotions and in developing skill in their motor activities.

Slight differences in the percentages for mental development in the three situations may reflect the greater possibilities for reflective activity and conversation with the teacher in the more confined areas of the patio and locker and bath rooms. A rather obvious implication of these findings is that student teachers need experience in all teaching situations.

II. A Comparison of Teacher Child Contacts in a Younger and an Older Group of Children

Findings from investigations of language development (7), motor development (4), and mental test performance (18), of nursery school children raise a question as to whether nursery school programs are as effectively adapted to the needs of the four year olds as they are to those of the younger children.

The purpose of this study was to make a comparison of teacher child contacts with younger and older children in a situation where the physical facilities, the training of staff members, the socio-economic selection of children, and the number of contacts recorded for each staff member were approximately the same.

Data

The 638 teacher child contacts of four teachers with children in the younger group were compared with 300 contacts made by two teachers, an assistant and a student teacher, with children in the four year old group. This group of children attended the nursery school from 2:30 to 5:00 p. m. The afternoon program began with a short inspection of the children by the head teacher. Tomato juice was served at 3:30 p. m. There was a short period for putting away toys before the last half hour during which time the children rested on cots in the patio for 15 minutes and had stories and quiet activities. Aside from this routine the remainder of the time was devoted to free play with an occasional short field trip or group project and time for music.

The staff included a head teacher, one assistant teacher and student teachers scheduled three to an afternoon. The assistant teacher who was a recent graduate in child development had been teaching at the time of the study for a period of one year. The student teachers had spent two afternoons a week for two months in the nursery school.

A difference in the selection of contacts in the morning and afternoon group was that whereas the one hundred and fifty odd contacts of each teacher in the morning included

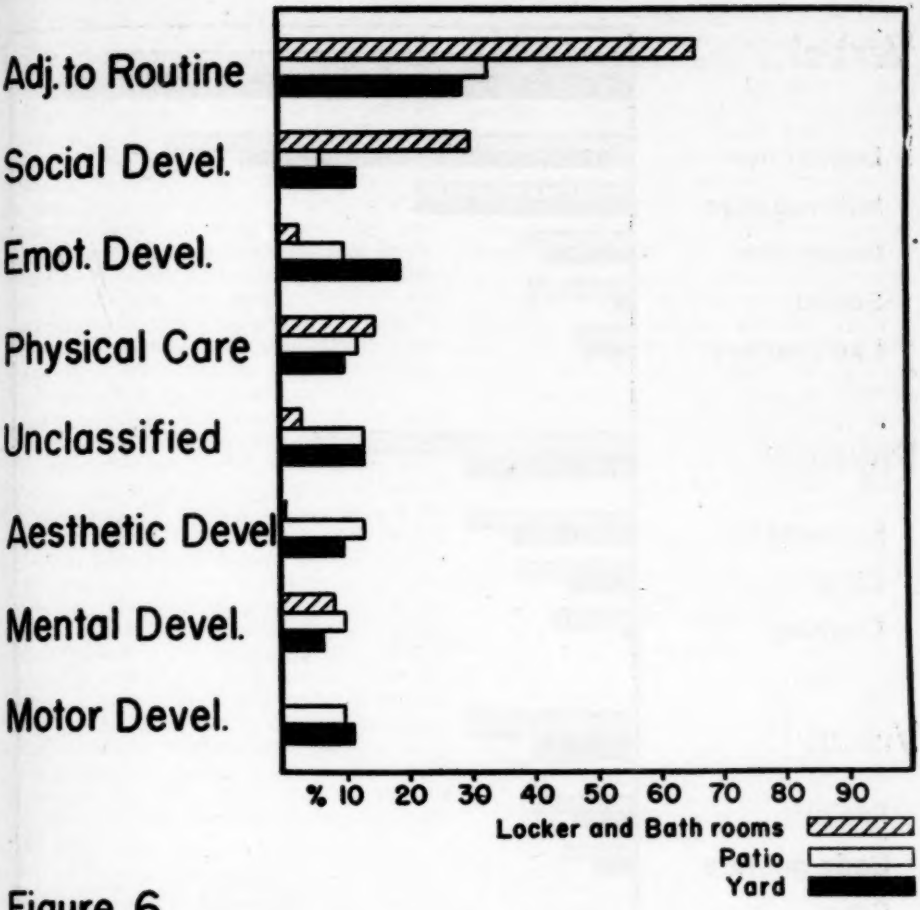

Figure 6

Teacher - Child Contacts in Three Teaching Situations Method Goals

approximately fifty contacts in each of three situations, yard, patio and bath room, the one hundred and fifty recorded for each teacher in the afternoon included 75 in the yard and 75 in the patio. In the afternoon a minimum of supervision was required in the locker and bath room. Teachers were not specially assigned to this area, but came inside when there seemed need of assistance. For this reason the 300 contacts recorded for yard and patio included only two contacts which actually took place in the bath room. The same method of recording contact, the first of each five-minute-period, was used for the afternoon as for the morning group.

Reliability

The percentage agreement of two independent observers on eighty contacts was as follows:

	Yard	Patio
Types of Contacts	99	100
Methods	99	100
Method goals	91	95

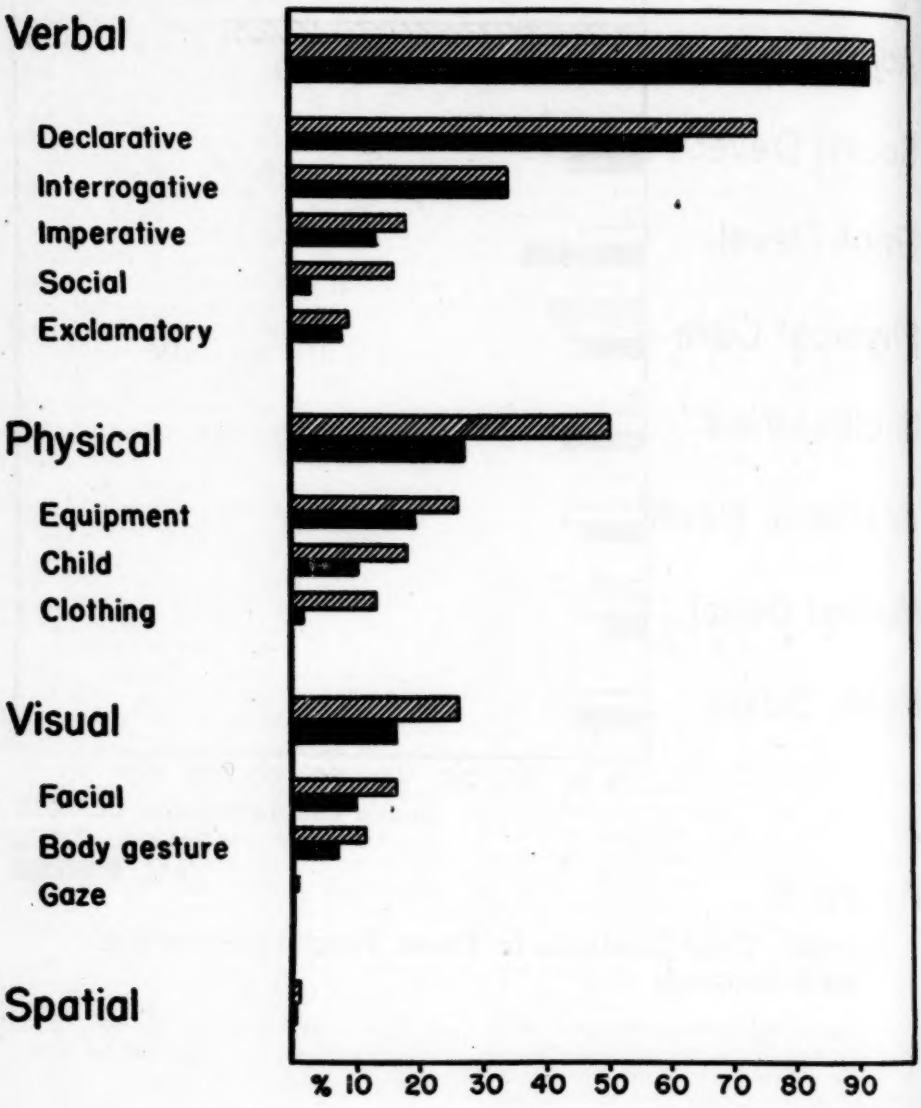

Figure 7

Types of Contacts in Younger and Older Groups

A glance at Figure 7 gives an immediate impression of more overt effort expended per contact with the younger children. In every category save interrogative sentences percentage frequency is higher for the younger group. A second impression is that the contacts are different in character with about twice as many physical and visual contacts in the younger group as are found with the older children. The teachers not only gave the younger children more physical assistance, particularly with their clothing, they also spent more time smiling welcome and encouragement and using gestures to help the children understand what they said to them. The use of social phrases and physical contacts involving clothing are apparently the teacher activities in which there is the most change from younger to older children. While the differences in types of contacts may seem more closely related to the younger children's greater need of physical assistance and directly expressed friendliness, to their slower reaction time, less developed motor coordination, use of language and ability to see relationships, the reduced percentages for the older children in the various categories are also significant in indicating the teachers' adaptive response to their greater maturity. The findings are consistent with the nursery school practice of having fewer children per staff member at the younger age levels. They also suggest that patience and warm friendliness may be even more necessary in staff members for the younger children than for the older ones.

TABLE IV

COMPARISON OF TEACHER–CHILD CONTACTS IN A YOUNGER AND AN OLDER GROUP OF CHILDREN

Types of Contact

	Younger	Older
Total Contacts	638	300
% Verbal	93	92
Declarative	74	62
Interrogative	34	34
Imperative	18	13
Social	16	2.6
Exclamatory	6.7	7.6
% Physical	50	27
Equipment	26	19
Child	18	10
Clothing	13	1.3
% Visual	26	16
Facial	16	9.6
Body Gesture	11	6.6
Gaze	.4	0
% Spatial	.8	.3

Methods

Figure 8 offers further evidence that more effort and a greater variety of methods are necessary in getting a point across to a younger child. Figure 8 and Table 5 also indicate that the methods found most effective with the younger children are not quite the same as those found most effective with the older group. In contacts with the older children the teachers were concerned with giving information in half of them, with asking questions in a third, and giving physical assistance and social support in a fifth. This is a different distribution from that found in the younger group where suggestion is the second most frequently used method, and where physical guidance is given ten times as often and example seven times as often as in the older group. These differences would seem directly related not only to the younger child's greater need for kinesthetic experi-

TABLE V

COMPARISON OF TEACHER–CHILD CONTACTS IN A YOUNGER AND AN OLDER GROUP OF CHILDREN

Methods

	Younger	Older
Total Contacts	638	300
% Verbal	93	92
Information	47	52
Question	32	34
Positive Suggestion	43	8.9
with reason	13.2	.6
without reason	29	8.3
Positive Command	19	11
with reason	3.4	.6
without reason	16	10
Positive Request	.9	0
with reason	.3	0
without reason	.6	0
Negative Suggestion	.9	0
with reason	.6	0
without reason	.3	0
Negative Command	.3	.3
with reason	0	.3
without reason	.3	0
Negative Request	0	0
with reason	0	0
without reason	0	0
% Physical Assistance	33	21
Guidance	16	1.6
Petting and Fondling	4.2	6.3
Restraint	1.4	0
Compulsion	.5	0
% Verbal and Physical Encouragement, approved or reassurance	32	19
Example	22	3.1
Disapproval	1.9	

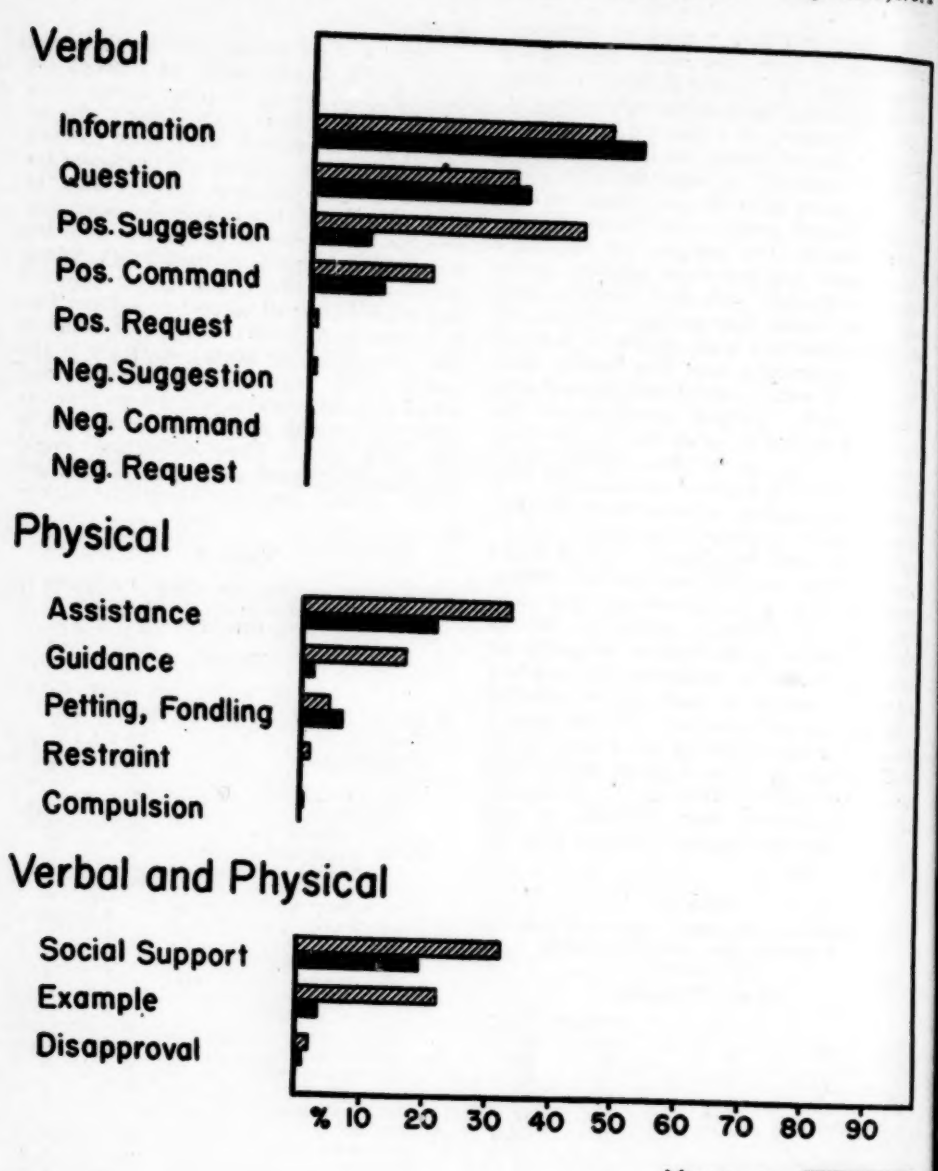

Figure 8

Methods Used in Younger and Older Groups

ence, demonstration and direction in learning new skills, but also to the older child's ability to reflect and use information. The difference in percentage for fondling in the two groups arose from a habit of the assistant teacher in the older group. In getting a child's attention she first laid a gentle hand on his arm or shoulder. This was not so much a fondling as an attention getting device, and was used particularly in the rest and story period when the teacher wanted to let a particular child know his mother had come for him without disturbing the rest of the group.

The reason for the higher percentage of commands than suggestions in the older group is suggested in the following figures:

	Younger Group		Older Group	
	Yard	Patio	Yard	Patio
Commands	18	16	16	5.6
Suggestions	31	36	6	12

The older children tended to take relatively more risks than the younger ones in climbing and balancing. Unequivocal commands were therefore sometimes necessary for their safety. Then, too, directions given in answer to children's questions often had an imperative sentence structure, though they were essentially informative in function. In situations where a suggestion was used in the younger group a teacher asked a question or gave information in the older group. For example, to a young child getting ready to rock the rocking boat while another child is getting on the teacher says 'Let's wait until John gets on.' In the older group she is more apt to say 'John is getting on.'

Method Goals

Figure 9 and Table 6 indicate two major differences in method goals in the two groups of children. The difference in regard to adjustment to routine would seem understandable in view of the strangeness of the situation to the younger group. That emotional development was classified as the method goal in twice the percentage of contacts in the older group that it was in the younger one arose from the interest and approval offered the older children in their art, carpentry work and other projects. Among the older children there was a greater tendency on their part to engage the teachers in conversation about their work. Horowitz (5) puts it very well when he says. "On one side the child is developing a sphere of independence, he does things for himself; on the other, he is developing a sphere of dependence, he has increasing need for personal relationship to adults." Other differences in method goals are so slight as to be of doubtful significance.

TABLE VI

COMPARISON OF TEACHER–CHILD CONTACTS IN A YOUNGER AND AN OLDER GROUP OF CHILDREN

Method Goals

	Younger	Older
Total Contacts	638	300
% Adjustment to Routine	42	17
Toileting	9.5	0
Use of Equipment	5.6	3.6
Washing	5.3	.3
Resting	5.1	5.3
Care of Personal Property	4.5	.6
Group Safety	4.5	1
Putting Away Toys	2.3	3.3
Tomato Juice	.8	1.6
% Social Development	15	15
% Emotional Development	12	24
% Physical Care	12	9
% None (Unclassified)	11	12
% Aesthetic Development	8.4	8
Literature	4	3.6
Graphic Arts	2.3	1.3
Music and Dance	.9	2
Plastic Arts	0	1.3
% Mental Development	8.3	11
Relationship	4	8.3
Language	2.5	1.3
Facts	2.3	5
Physical Science	2.1	7
Biological Science	2.1	3.3
Social Science	0	0
% Motor Development	7.7	7

Percentage distributions of types of contacts, methods, and method goals in the two groups give no indication of qualitative differences in the contacts. The activities of the older children, which often take them out of the school on field trips and lead to a variety of simple projects, are not the same as those of the younger children. The same is true of the questions they ask and the information given them. Contacts made with them have subtler implications than those with the younger children, and are therefore more difficult to classify. If the teacher of younger children needs slightly more patience, it would seem equally possible that the teacher of the four year olds needs more information, more ingenuity, and a quicker wit.

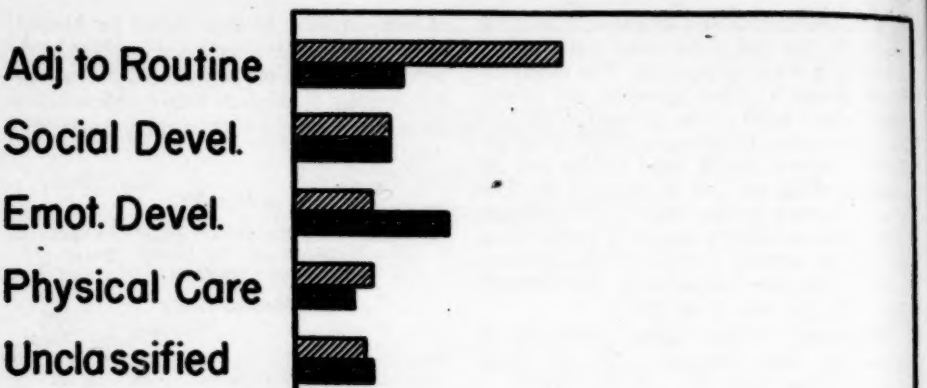

Figure 9

Method Goals in Younger and Older Groups

III. A Comparison of Teacher Child Contacts in a University and a W. P. A. Nursery School

Studies of teacher-child contacts already published include only one (2) in which observations were made in a W. P. A. nursery school. As the majority of young children enrolled in nursery schools during the past ten years have been in W. P. A. rather than university nursery schools it is of interest to compare the kind of educational guidance offered by teachers in the two types of nursery schools. This study was concerned with a comparison of 300 teacher-child contacts made by two teachers in a W. P. A. nursery school and 638 teacher-child contacts made by four teachers in a university nursery school.

Description of the Nursery Schools

The university nursery school has already been described. The W. P. A. nursery school was housed in some rooms on the second floor of a public grammar school. Its indoor facilities included two playrooms, a locker room, bath room, sleeping room and dining room. Across the hall from these rooms were the grammar school children's classrooms. Because of this arrangement nursery school children were under constraint to be quiet and not disturb the older children. A part of the grammar school playground was fenced off to provide a play space for the nursery school children. To reach this play yard the children had to walk down one and a half flights of cement steps. The nearest toilet facilities were those used by the older school

children, 300 feet away in the basement of the school building.

There were twenty-two children in the group under observation ranging in age from two years to three years six months. The children came from families of lower socio economic status in which both parents worked. No mental tests had been made on the children. The group was staffed during the morning period of observation by a head teacher and one assistant. Both had undergone a short training period conducted by the local W. P. A. administration. The head teacher was a college graduate with several years of teaching experience in W. P. A. nursery schools. The assistant teacher had completed two years of college education and had less than one year of teaching experience. The program during the period of observation from 9:00 to 11:45 included morning inspection, free play in and outdoors, mid-morning lunch, toileting and washing in preparation for the rest period before lunch.

Data

Observations were made in the W. P. A. nursery school during the months of November and December, 1942. This extended period was made necessary by weather conditions which made it impossible for the children to be outdoors. As in the other two studies the first contact at the beginning of each five minute period was recorded during the hours of 9:00 to 11:45. Fifty contacts were recorded for each of two teachers in each of three situations, yard, playroom, locker and bath room. The 300 contacts thus obtained were compared with the 638 previously obtained on four teachers in the university nursery school.

Reliability

Percentage agreement for two independent observers on 75 contacts were as follows:

	Locker	Yard	Patio
Type of contact	97	99	98
Method	93	93	96
Method goal	100	84	98

Before making any comparison of the teacher-child contacts in the two nursery schools it is necessary to emphasize the fact that the two situations differed in many respects. Specifically, these were the age range of the children, the socio-economic status of their parents and intelligence factors associated with socio-economic status, the length of time for which children were enrolled, the staff-child ratio, the type and degree of professional training of the staff, the physical facilities provided and the number of hours each day the children and staff were in attendance.

Types of Contact

The differences in percentage distribution of types of contact in Figure 10 suggest a somewhat different atmosphere in the two schools. In the W. P. A. group, the teachers used physical handling of the children in 42 per cent of their contacts and imperative sentences in 49 per cent, or three times as often as in the University nursery school. Declarative sentences generally used for giving information or making suggestions were used only half as often in the W. P. A. nursery school. The same is true of interrogative sentences. Physical contacts with the children's clothing and equipment, changes in facial expression, such as smiles and nods of approval, occurred significantly less frequently in the W. P. A. group. All this would seem to indicate a more authoritarian attitude on the part of the teachers in charge of the latter group and perhaps more concern with having orders carried out and routines followed through than with the educational possibilities of these experiences for the children.

TABLE VII

COMPARISON OF TEACHER–CHILD CONTACTS OF TEACHERS AT W. P. A. AND I. C. W. NURSERY SCHOOLS

Types of Contacts

Nursery School	W.P.A.	I.C.W.
Total Contacts	300	638
% Verbal	84	93
Imperative	49	18
Declarative	37	74
Interrrogative	24	34
Social phrase	15	16
Exclamatory	3.0	8.7
% Physical	61	50
Child	42	18
Equipment	24	26
Clothing	10	13
% Visual	18	26
Body Gesture	11	11
Facial expression	9.0	16
Gaze	0	.4
% Spatial	.3	.8

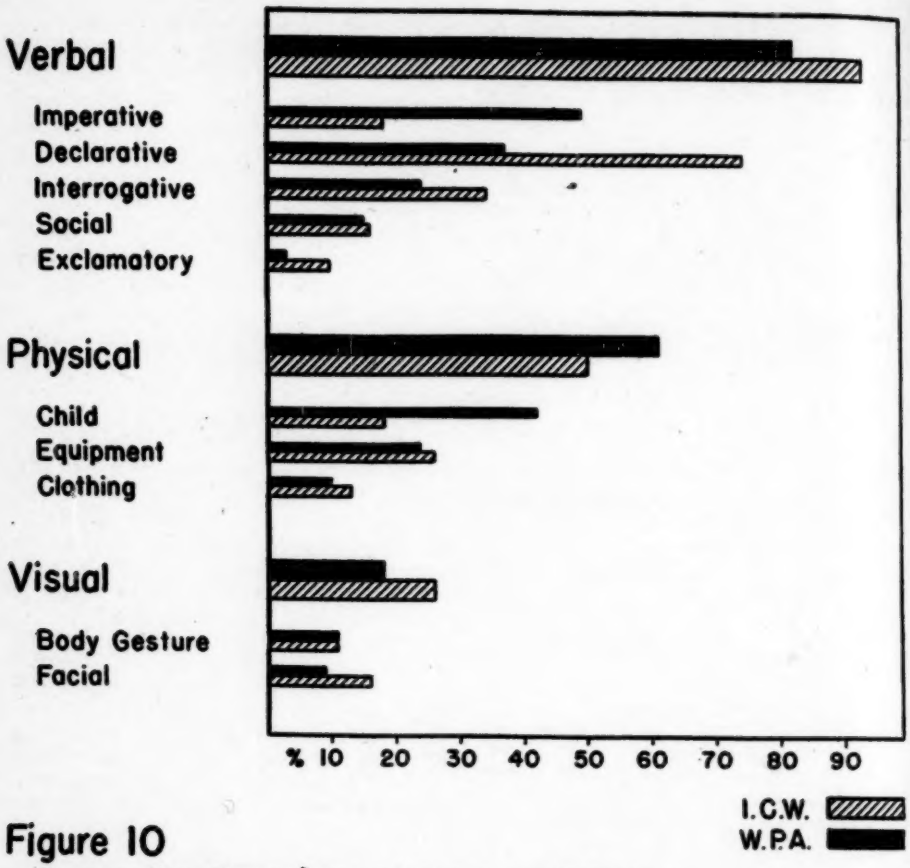

Figure 10

Comparative Percentages of Types of Contacts in W.P.A. and I.C.W. Nursery Schools

Methods

Table 8 and Figure 11 strengthen the impression gained from the percentage distribution of contacts. Positive command is the most favored method of modifying children's behavior in the W. P. A. nursery school. It is apparently sometimes reinforced by physical compulsion which was used twenty times as often in the W. P. A. as in the University nursery school, and by disapproval, which though rarely used occurred three times more often in the W. P. A. school. Conversely, positive suggestion was used less than a fourth as often and information and questions slightly more than half as often as in the University nursery school. There was also significantly less encouragement offered and physical guidance given. Petting and fondling, however, were employed more than three times as often in the W. P. A. group and thereby accounted for some of the difference found in physical contacts in the two schools. Qualitative differences in the contacts in the two schools are not revealed in figures. Information given in the W. P. A. nursery school was consistently of a rather obvious type, referring to the facts of immediate status of the child and his belongings, such as "Your hands are still dirty," or "The washcloth is wet." In the University nursery school some of these informa-

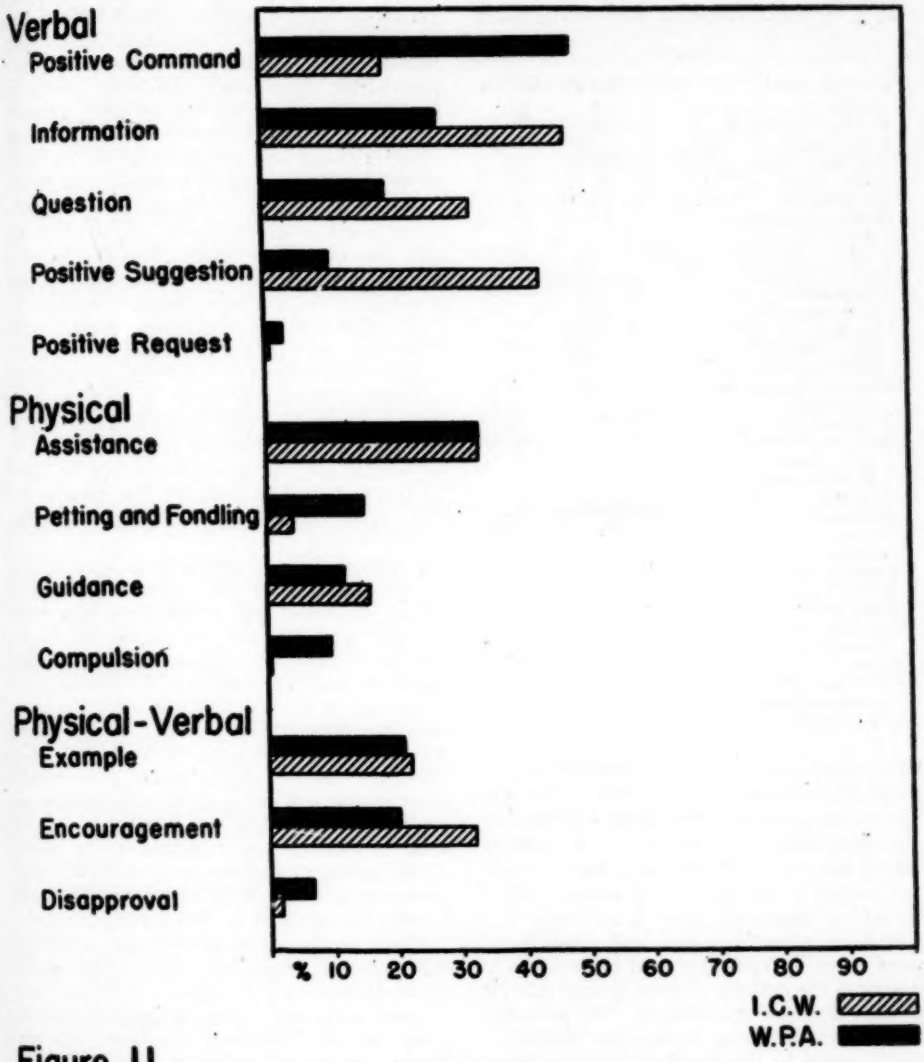

Figure 11

Comparative Percentages of Methods in W.P.A. and I.C.W. Nursery Schools

TABLE VIII

COMPARISON OF TEACHER–CHILD CONTACTS AT W. P. A. AND UNIVERSITY NURSERY SCHOOLS

Methods

Nursery School	W.P.A.	I.C.W.
% Verbal	84	93
Positive Command	48	19
with reason	.6	3.4
without reason	47	15
Information	27	47
Question	19	32
Positive Suggestion	10	43
with reason	1	13
without reason	9.0	29
Positive Request	3	.9
with reason	0	.3
without reason	3	.6
Negative Command	1.9	0
with reason	.6	0
without reason	1.3	0
Negative Suggestion	.3	.9
with reason	.3	.6
without reason	0	.3
Negative Request	.3	0
with reason	0	0
without reason	.3	0
% Physical	61	50
Assistance	33	33
Petting and Fondling	15	4.2
Guidance	12	16
Compulsion	10	.5
Restraint	1.3	1.4
Deprivation	1.0	0
Punishment	.6	0
% Physical or Verbal		
Example	21	22
Encouragement, approval or reassurance	20	32
Disapproval	6.6	2

tive statements contained explanations of simple relationships such as that a bike tips on uneven ground. The same was true of questions which in the W. P. A. nursery school were of a "Where are your mittens" type, while in the University nursery school "Does the guinea pig have a tail" and "Do you know what tree this leaf came from" were typical of questions used by teachers to stimulate the children's curiosity and interest in what they saw around them. The same difference was apparent in example. During a music period in the W. P. A. nursery school the teacher said to the group: "Make a windmill in Holland. Like this.", and raised her hands above her head so that the children would imitate her. Music periods in the University nursery school consisted of singing simple songs which the children could understand as well as in spontaneous singing by children and teachers in the free play period. Significant in this connection is the following example of physical compulsion in the W. P. A. nursery school. T. said "We're going to music, Sally." Sally said "No," and began to cry. T. took Sally's hand and propelled Sally against her squirming resistance to the room where the children had already started their music period. Teacher lifted Sally, who was still crying and squirming, on to the bench and placed a bell in her hand.

Disapproval, mostly registered by a shake of the head in the University nursery school, also tended to be much stronger in the W. P. A. nursery school. For example, when a group of children were taking a walk with their teacher round the school grounds one little boy spat in the fishpond. Four times Teacher disapprovingly said "Bobby, did you spit in the fishpond? Look at me. You had better stand back from the pond. Fishes don't like that. I'm surprised at you." In a case of spitting in the University nursery school the child was told that if he felt like spitting he could go in to the bathroom and spit in the toilet.

Deprivations and punishment were found in no instances in the University nursery school, but as Table 8 indicates they were recorded in a few contacts at the W. P. A. school. Deprivation is illustrated by the following contact recorded there. C. had climbed to the top of a high slide just after the children had been cautioned not to do so. When he came down he began to swing. T. said "No, you cannot swing, you've done something we told you not to do." A more common method of deprivation was for the teacher to make a child sit on a bench in the yard. Actual physical punishment was found very infrequently at the W. P. A. school. When it occurred it consisted of shaking the child.

Many factors undoubtedly contributed to the differences in methods used by the teachers in the two nursery schools. The part that physical setup and equipment played is illustrated in the following situation: thirteen children were grouped around the one easel in the nursery school yard; all the children were anxious to paint and in their eagerness they interfered with the activity of the one child who was painting. This situation brought forth the following three teacher-child contacts. Teacher said, with her hand on child's shoulder, "Don't put your hand on it, Sandy, for it will upset." Then Teacher said, push-

ing them away, "Children, won't you please run away and play in the sandbox." The next contact recorded after five minutes was of the same order. Teacher said "Nancy, didn't I tell you to stay away until Clara is through painting?" In the University nursery school the two easels are in the patio art unit. If both are in use and other children wish to paint they are offered other creative work to do with their hands, such as finger painting, crayoning, or modeling. In the W. P. A. nursery school no such redirection was possible because art materials were kept in the playroom on the second floor. While it is true that this arrangement handicapped the teachers, it is equally true that they had some voice in the arrangement. Though no degree of teaching ability can compensate adequately for a dearth of raw material and an awkwardly planned building, a teacher's ability to adapt and use her resources effectively is much more important than her actual resources. A teacher who is fatigued by too heavy a teaching load and by discouraging working conditions is, however, often in no state to function effectively in matters of planning and organization.

Method Goals

Having children adjust to a fairly rigid routine, giving them physical care, and a certain amount of demonstrative affection, were the major ends toward which the teachers seemed to be bending their efforts. Fostering understanding of others' behavior and the ability to get along happily with other children was recorded as a method goal relatively infrequently and only one fourth as often as in the University nursery school. Aesthetic development, recorded as one per cent, was the only other method goal represented in the teacher-child contacts. Differences in method

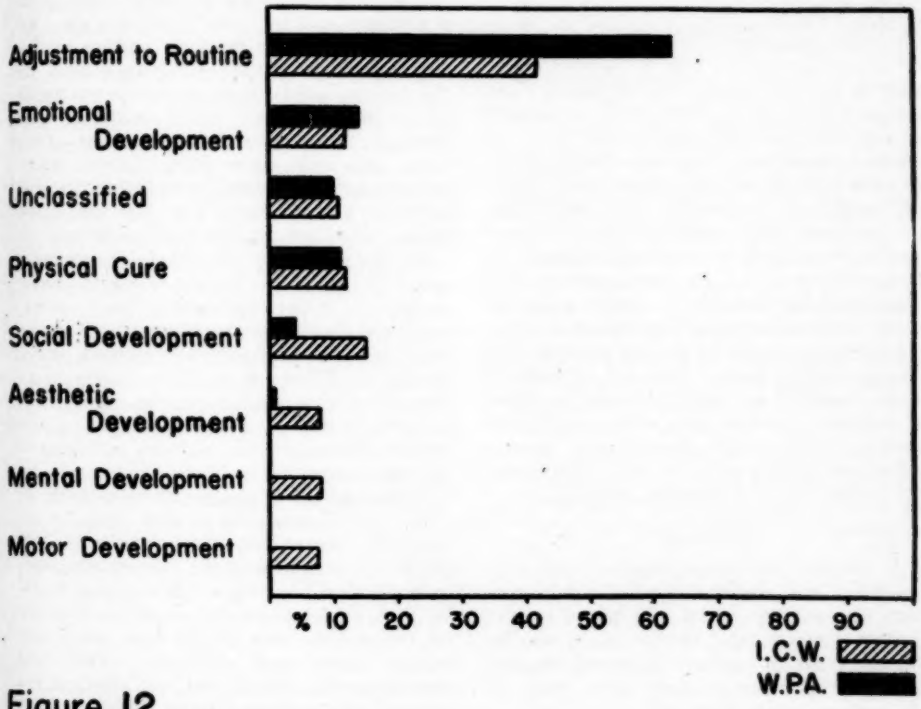

Figure 12

Comparative Percentages of Method Goals in W.P.A. and I.C.W. Nursery Schools

TABLE IX

COMPARISON OF TEACHER–CHILD CONTACTS OF ASSISTANT TEACHERS AT W. P. A. AND UNIVERSITY NURSERY SCHOOLS

Method Goals

Nursery School	WPA	University
% Adjustment to Routine	63	42
Rest	13	5.0
Toilet	10	10
Group Safety	10	5.0
Washing	9.0	5.3
Use of Equipment	6.3	5.6
Tomato Juice	4.0	.8
Quiet	1.3	----
Clothing	1.3	4.5
Putting away Toys	.6	2.0
% Emotional Development	14	12
% No Goal	10	11
% Physical Care	11	12
% Social Development	4.0	15
% Aesthetic Development	1.0	8.0
Music and Dance	.3	.9
Graphic Arts	0	2.0
Plastic Arts	0	0
Literature	.6	4
% Mental Development	0	8
% Motor Development	0	7.7

goals in the two schools may represent a difference in philosophy. What is more probable is that the method goals in the W. P. A. nursery school were a matter of expediency, dictated by limited staffing and limited physical conditions. As there is no evidence that the particular University and W. P. A. nursery schools studied were representative of University and W. P. A. nursery schools throughout the country, it would be an assumption to offer general conclusions concerning these two types of nursery schools. The findings merely suggest that it is possible to make a reliable and fairly objective appraisal of teachers' activities in nursery schools, and that teacher activities in different nursery schools may differ widely in their educational significance for the children enrolled.

SUMMARY

A reliable and comprehensive method of observing and classifying teacher-child contacts in a nursery school in terms of type of contact, methods, and method goals, was developed from an analysis of several hundred teacher-child contacts made by a group of six nursery school teachers.

Observations of teacher-child contacts in a group of two and three year olds revealed 93% of contacts verbal, 50% physical and 26% spatial. The methods used were consistently of a positive and encouraging nature with the following order of diminishing frequency in the five methods used most often—giving information, offering suggestions, giving physical assistance, giving encouragement and approval, and asking questions. While the teacher's major method goal in terms of the category definitions was helping the child adjust to routine, she was also concerned with his social, emotional, aesthetic, mental and motor development, and with his physical comfort and well-being.

Comparison of teacher-child contacts in three different teaching situations indicated that type of contact is to some extent related to the particular teaching situation: playroom, yard or locker and bath room, in which it occurs. Representative samples of teacher-child contacts should therefore include all teaching situations.

A comparison of teacher-child contacts in a younger and an older group showed an adaptation on the part of the teacher to the difference in maturity in the two groups. In the younger group there were almost twice as many physical and visual contacts. The younger children were given more suggestions, more commands, more social phrases, more example and demonstration and more physical assistance and guidance. The older were given slightly more information and questions.

Method goals also differed. In the younger group adjustment to routine was listed twice as often as in the older group. In the latter, emotional development and mental development were more frequently method goals. Qualitative differences in the type of information given and questions asked, though not revealed in this quantitative analysis, would further differentiate the teachers' activities in the two groups.

A comparison of teacher-child contacts in a W. P. A. nursery school with those in the University nursery school suggested a slightly different atmosphere in the two schools, with more physical handling of the children in the W. P. A. school, more commands, more physical compulsion, and disapproval, less information given and questions asked, less encouragement offered and less physical assistance and guidance given. Method goals also differed. In the W. P. A. nursery school, the teachers seemed mainly concerned with having the children adjust to a fairly rigid

routine, giving them demonstrative affection, and physical care.

This method of analyzing social contacts could be adapted for observation of parent-child and nurse-child contacts. It should also be helpful as a teaching and evaluating device in parent-education, and teacher training programs.

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A TEST OF GENERAL INFORMATION FOR CHILDREN OF PRESCHOOL AGE[1]

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STATEMENT OF THE PROBLEM

With the downward extension of the educational program, there is a rising need for some objective means of measuring the relative achievement and progress of children between the ages of two and five years in all phases of their educational development. At the present time there is a dearth of standardized tests, either of general information or of specific content knowledge, for children below the kindergarten level, and only a limited number for children from five to six years.

It was the purpose of this research to construct an achievement test of general information for preschool children, integrating the results of this study with other research previously done in the field of information tests at the Iowa Child Welfare Research Station, (1) (8) (10) (11) (13) (15). The work of the four[2] test authors (1) (8) (10) (15), upon which this research was based, though exploratory in nature, did indicate that it is possible to differentiate between preschool children on the basis of their informational background. In addition, these investigations demonstrated a testing technique which was well suited to this particular area and which proved itself effective for use with young children. In the present study the same testing technique, a multiple choice picture type of test, was retained and approximately one third of the test items used represent materials taken directly or revised from these four tests.

Specifically the aim of this study was to devise a testing instrument capable of ranking children in terms of their total achievement in this area and representative of subject matter content believed to be of importance to the educational development of children. Although there is need of such a test for the entire preschool age range, in this research the test was constructed with children 42–72 months of age in mind.

Since none of these test authors had developed a successful method for evaluating test content, such a scheme was devised for the materials used in this study. Methods of rating were evolved 1) to validate the underlying concepts used in the test, 2) to estimate the degree of relationship existing between the basic concepts and the test questions, and 3) to judge the effectiveness with which each item in its test context fulfilled its intended purpose.

DEVELOPMENT AND VALIDATION OF TEST CONTENT

It is probably true that the information an individual possesses at any given time is of value to him primarily because of the contribution it makes to his present understanding of the world in which he is living. However, it must also be recognized that particularly for the young child information as preparation is of importance. The concepts and generalizations required of the child at the age of school entrance have their roots in the informational content accumulated by him in the preceding years.

In keeping with this line of reasoning the initial selection of test content was made by analyzing courses of study and curricula for elementary school age children and reinterpreting the concepts included in them in terms of the informational content basic to them. The recommended courses of study in the social sciences, the physical sciences, geography, and home economics were canvassed. On the basis of this survey concepts were formulated which were: 1) prerequisite to more complex concepts the child would need later in his educational career, and 2) within the interest and comprehension of preschool age children.

It was not assumed that children of the age levels to be studied would be able to verbalize

[1] This study was carried out under the direction of Dr. Ruth Updegraff at the Iowa Child Welfare Research Station. The present report is a condensation of a dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Child Welfare, in the Graduate College of the State University of Iowa, July, 1942. A copy of the complete test is on file in the Child Welfare Department of the State University of Iowa.

[2] Subject matter content for a Community Living test was developed by Marcia Hare, but no report was written by her of the experimentation done.

all or any of the concepts as they were stated. Rather, the aim was to include concepts which children would use in practice without verbalizing, and concepts which children might be developing. In order to put some limitation upon the scope of the concepts, an attempt was made to limit them to those which the child would use in the preschool years or which would be basic to those needed in the first three grades of elementary school.

To verify the experimenter's selection and interpretation, independent judgments were obtained of the basic content thus evolved. In framing suitable and workable criteria for evaluating the materials to be used in the test, it was decided to follow the leads provided by research workers in the field of elementary education. For a number of years, the criterion of "social utility" has been used as a standard by which the various school curricula could be appraised. Of late, the term "relative utility" has supplanted the more general term and has been analyzed into those elements which contribute to social utility.

There were four factors, representative of this general criterion, which seemed to adapt themselves well to a system of quantification. These were:

1) The frequency with which children used the concepts.
2) The extent to which the concepts would be accessible to the majority of children in all types of circumstances.
3) The usefulness of the concepts in terms of their ability to integrate with other more complex ideas children might be forming.
4) The degree to which the concept could prove crucial to children's safety or personal adjustment.

These four elements were described in continua, each including three scale values. The continuum of *frequency of use* extended from (1) those concepts which children use almost daily, or with which they come into contact almost daily, to (3) those concepts which the child rarely or never uses or contacts.

A continuum of *spread of use* was described in terms of the presence or absence of various types of handicaps which might operate to prevent children from acquiring the concepts, but which would have little or no relation to the degree of alertness of the child to his environment. The handicaps which were considered in this rating were: a) the residence of the child in a given region of the United States, b) residence in rural or urban areas, c) the financial status of the family. It was assumed here that all educational opportunities of the wealthy would not necessarily be better than for those with less money, but reference was made to the possible handicaps which might exist merely by virtue of the material accompaniment of wealth or the lack of it. A scale of (1) was given to concepts the development of which would not be handicapped by any of the factors.

Concepts which were to be rated as (1) in a continuum of *integrative value*, were those which were considered as basic to the development of more complete and complex concepts which the child would be needing before completion of the primary grades.

The criterion *cruciality* extended from (1) those concepts without which most children would be almost certain to experience bodily harm, or to fail in making a successful personal adjustment, to a value of (3), those concepts in which there seemed to be no relationship between bodily harm or personal adjustment and the concept in question. The above rating covered the aspect of judging the social usefulness of the supporting concepts.

Some type of rating also was necessary to estimate the effectiveness with which each item tested for the presence of the concept or for its incipient development. It was decided that the different degrees of relationship which might exist between a concept and the test items purporting to measure it, could be expressed best in terms of the level of information implied in each test question. A continuum of relevance or degree of relationship therefore was set up using various levels of information as the scale values. In describing the continuum in these terms two assumptions were made:

1. That there are different degrees or levels of information. These levels might be thought of in terms of the following abilities. (This list is not exhaustive, nor does it constitute a hierarchy.)
   a. The ability to connect the name of an object or activity with the object or activity.
   b. The ability to differentiate an individual object or a process from other objects or processes belonging to the same class.

c. The ability to utilize information, that is, to see relationships and to make generalizations about them or make interpretations of them. This level has within itself a number of degrees of extension and complexity, but no further differentiation will be made here.

2. That the elementary levels described as (a) and (b) above are essential to the development of level (c). Further, if it is possible to test for the ability as described in (c), the other levels will automatically be included.

It seemed advisable, in so far as possible, to assign scale values such that the items rated as falling at the upper levels of the continuum would be those which were representative of the level of information as described in (c) above, i.e., the ability to utilize information. This decision seemed in keeping with the general aim of selecting content believed to be socially useful to the child; isolated bits of information do not assume importance until they are combined for the purpose of making interpretations or understanding relationships.

A scale for rating test items was then constructed using four scale values. A value of (1) was given to a test item which, it was believed, tested for the concept as it was stated; a value of (2) if the item tested for an essential portion of the concept, that is, for a less complex or extensive concept, but one that was logically basic to the stated concept; a value of (3) if the item did not test for a generalization regardless of the level, but for an element which was essential to the concept, i.e., an item might test for the knowledge of the vocabulary involved, or the ability to connect the name of an object and a picture of the object; and a value of (4) if the item tested for something which had little relevance to the concept as stated or to the elements involved. If, then, a test item were such that it could be rated at the upper values of the continuum the item should be capable of testing for the ability to utilize information.

Ratings were obtained concurrently on the concepts and the items. Seven individuals who were specialists in either elementary or preschool education participated. Altogether, 59 concepts and 255 test items were submitted.

Sample of the Concepts and Items Rated

A sample of the type of concepts and items submitted to the raters is given below. In some instances generalized concepts were used to help channelize the thinking of the raters, but the rating was applied to the specific concept immediately preceding the test items.

SAMPLED FROM SECTION ON GEOGRAPHY

Man's Adaptation to the Natural Environment

I. **Man adapts to his environment in different ways. The limitations of his adaptation are set, in part, by the physical environment and in part by man's ability to cope with these limitations.**

A. Man must either build his houses and roads and cultivate his fields in a way that conforms to the surface of the locality or make changes in the surface, or he may not cultivate his fields.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. The road where you must drive slowly. (Winding mountain road)	Relevance	1 2 3	4
2. The field where the farmer would have a hard time plowing. (Rocky land)	Relevance	1 2 3	4
3. What do we build so that cars can get over the river?	Relevance	1 2 3	4
B. Man adjusts to distance by inventing fast methods of travel and communication.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. The way we travel in the air.	Relevance	1 2 3	4
2. The fastest way to travel.	Relevance	1 2 3	4
3. The fastest way to send a message.	Relevance	1 2 3	4

C. Some things in the natural environment man must endure, at least until he gains the knowledge or the facilities needed for controlling them.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. The place where there has been so much rain that the rivers won't hold all the water.	Relevance	1 2 3	4
2. The place where cars would have a hard time going. (Muddy road)	Relevance	1 2 3	4
3. Where a hard rain has washed the ground away.	Relevance	1 2 3	4

SAMPLED FROM SECTION ON SCIENCE

Biology

I. All living things produce young which resemble them in structure			
A. Animals and plants begin life as seeds, bulbs, or eggs.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. Where a baby chick stays until it is hatched.	Relevance	1 2 3	
2. What do flowers start from in the beginning.	Relevance	1 2 3	4

Physics

II. Properties and Substances.			
A. Substances have characteristic properties. Weight, fluidity, temperature, etc.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. What will burn you if you touch it? (Fire)	Relevance	1 2 3	4
2. What feels cold when you touch it? (Ice cream)	Relevance	1 2 3	4
3. Which of these can you pour?	Relevance	1 2 3	4
4. What happens to water if it gets very cold?	Relevance	1 2 3	4
B. The instrument used for measurement differs depending on the type of measurement desired.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. What shows us how heavy something is?	Relevance	1 2 3	4
2. What do we use to find out how long something is?	Relevance	1 2 3	4
3. What shows us how warm or cold the weather is?	Relevance	1 2 3	4

SAMPLED FROM SECTION ON COMMUNITY LIVING

Economic Structure of a Community

I. The material goods and the services we require are supplied by certain individuals or groups of individuals			
A. There are certain commodities and services which are supplied direct to our homes.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. How electricity comes to our homes.	Relevance	1 2 3	4
2. How water comes to our homes.	Relevance	1 2 3	4
B. There are special kinds of workmen who work with different kinds of material used in our homes and special places where certain types of work are done.	Frequency	1 2 3	
	Spread	1 2 3	
	Integration	1 2 3	
	Cruciality	1 2 3	
Items			
1. What the plumber fixes.	Relevance	1 2 3	4
2. Where an electrician is needed to do some work.	Relevance	1 2 3	4
3. Where a carpenter is needed to finish the work.	Relevance	1 2 3	4

II. In return for the commodities and services which individuals supply us, money is paid to them either in wages or directly for the commodity or service.

A. Money is used to pay for things we buy. Some things cost more than others.

Frequency	1	2	3	
Spread	1	2	3	
Integration	1	2	3	
Cruciality	1	2	3	

Items

1. When you buy something, what do you need to pay for it?	Relevance	1	2	3	4
2. Which costs the most to buy? (Bicycle or car)	Relevance	1	2	3	4

B. People get paid money for doing work. Different kinds of jobs pay more than others.

Frequency	1	2	3	
Spread	1	2	3	
Integration	1	2	3	
Cruciality	1	2	3	

Items

1. What do fathers get for doing work?	Relevance	1	2	3	4
2. Which man makes the most money?	Relevance	1	2	3	4

SAMPLED FROM SECTION ON HOME LIVING

Maintaining a House for a Family

I. In order to maintain a house for a family, a great many activities must be engaged in.

A. To prevent fresh food from spoiling it must be kept cold, or certain kinds may be canned.

Frequency	1	2	3	
Spread	1	2	3	
Integration	1	2	3	
Cruciality	1	2	3	

Items

1. Which of these foods will spoil in a few days if it isn't kept cold?	Relevance	1	2	3	4
2. The woman who is fixing food so that it will keep good to eat for a long time. (Canning)	Relevance	1	2	3	4

II. Maintaining a home for a family depends in a large part upon the type of personal relationships which exist between its members.

A. Members of a family should help one another.

Frequency	1	2	3	
Spread	1	2	3	
Integration	1	2	3	
Cruciality	1	2	3	

Items

1. The boy who is helping his mother.	Relevance	1	2	3	4
2. Which one of these can't do very much for himself? (Baby)	Relevance	1	2	3	4
3. Who takes care of the children in the family? (Parents)	Relevance	1	2	3	4

Summary of the Results of the Ratings

The bases upon which the results of the ratings on concepts and the items were analyzed consisted of both objective and subjective examination. The two rating scales had been so constructed that the scale value of 2 or less could be considered acceptable. The numerical values assigned to the various criteria by all the raters therefore were added in each instance and then averaged. All items or concepts receiving an average rating of more than 2 were discarded. Test items associated with concepts which proved unsatisfactory were automatically eliminated.

The evaluation of the concept ratings required an additional step since rarely would any concept rank high in all four of the criteria used. It was decided, unless three out of four criteria received an average rating of less than 2, the concept would be discarded.

The spread of the rating scores was analyzed next. If, for example, two items each received a total score of 13, and in one instance three individuals rated it as (3) and four as (1), this result was considered as less satisfactory than one in which the distribution was 4, 4, 1, 1, 1, 1, 1. In such borderline

cases, the comments made by the raters were taken into consideration.

Five concepts were discarded on the basis of the ratings. After a limited number of revisions had been made on the basis of recommendations submitted by the raters, a total of 195 items remained.

Construction of the Test

A multiple choice picture test was then constructed similar to those used in the earlier studies.

Briefly, the procedure of construction consisted of selecting a group of four pictures, one of which depicted the correct answer, while none of the other three could possibly be considered to fulfill the conditions of the question. After pictures were selected, and cut into uniform size, they were mounted on heavy white drawing paper 13″ by 20″. The position of the correct picture was varied so that it appeared in each of the four possible positions an equal number of times. The test pages were covered with a sheet of cellophane to prevent soiling and then arranged into books held together by large removable metal rings. The order of test pages was such that the test picture varied in its position and only occasionally did it appear in the same place on two successive pages.

The previous investigators had drawn up a group of criteria to govern the construction of the test pictures and test items covering such matters as the variety in subject matter and in the difficulty of the items chosen, the interest value and complexity of the test materials, and the types of skill required of the child. These criteria were used in so far as they were applicable to the test materials at their present stage of development. However, certain changes were needed (1) to reduce the language handicap for children with meagre vocabularies, (2) to help fulfil the purpose of differentiating between different levels of information, and (3) to reduce certain sources of error which were believed to be operating in the previous tests, due to the size and placement of pictures.

To obviate the language difficulties, all test questions as finally formulated were checked against the combined vocabulary lists of Gates (4), Stone (14), and Dawe (2). Wherever possible, questions were stated so that no words occurred which were not in at least one of the vocabulary lists. It was felt that certain exceptions could be made to the lists, since the Gates and Stone lists are composed of words recommended for use in beginning reading and spelling, and do not represent the entire understood vocabulary of children in the primary grades.

The following lists comprise the words used in the test questions which were either not in the vocabulary lists, or were classified in one or more of the lists as difficult words for second grade or easy words for third grade readers.

engineer	electric*
hatched	Eskimo*
land (airplane)	load*
material	measure*
Mexico	mend*
movie	message*
pilots	newspaper*
plumber	plenty*
web	pump*
wash (erosion)	speeding*
workmen	traffic*
alive	

Likewise, certain changes in the pictures used in the items retained from the old tests were indicated. On many test pages, the pictures used differed markedly in size, shape, and in the quality of the photographic reproduction. It was felt that all test pictures should be equated for these qualities, as far as practicable, to reduce the chance of correct responses occurring on the basis of these factors alone.

The criteria for the selection of confusing pictures constituting the wrong responses on a test page were altered somewhat. Previously, the confusing pictures were chosen primarily for the confusion introduced through the similarity in the size or shape of the objects. An attempt was made here to select wrong response pictures on the basis of a relationship in the content matter rather than on the similarity in form. In addition, pictures were selected of the test objects in their natural setting rather than in isolation as had been done in the earlier tests.

Final Rating of the Test Materials in Context

The final scheme of rating, pertaining to the items in their test context, consisted of judgments as to 1) the minimum level of information required by the total test situation for success on an item, 2) the degree to which certain criteria, designed to reduce the pos-

* Words classified by Stone as appearing in difficult second grade or easy third grade readers.

sible sources of error due to the test pictures were fulfilled, 3) the presence of errors and ambiguities.

Ratings were obtained from three individuals. Items were considered to be acceptable if two out of three judges concurred as to the level of information implied in the item, but unanimous agreement was required concerning the absence of sources of error and of ambiguities. In several instances it was necessary to revise test pictures and questions to meet the criticisms offered by the raters. On completion of this evaluation there were 174 items judged to be adequate for further experimentation.

Administration of the Test

Preliminary tests were made to determine the order of difficulty of the items, and to eliminate those which were obviously defective. Children, three and one half to seven years of age, drawn from a population of high socio-economic and educational status were used as subjects in this part of the study. On the basis of the responses of these seventy children, 118 test items were chosen for the final testing.

For this analysis the subjects were divided into twelve months age groups and an inspection made of the progression in the percentage of each group succeeding on the items. The criteria determining the acceptability of an item were regularity in the rise of the percentage curves, and an increase of approximately twenty per cent between age groups in the proportion passing the item. Exceptions were made in cases of very easy or extremely difficult items. That is, items were retained if approximately eighty per cent of one of the younger age groups passed the item which consequently left limited room for improvement at the older levels, or if less than twenty per cent of the children at the younger levels succeeded on an item but substantial increases occurred between older age groups. Thus, discarded items included those for which the increase in percentage passing was less than twenty per cent between each of the three age intervals, or for which reversals occurred in the rise of the percentage curve from age to age.

Because of the large number of items still remaining in the test, two test books of 59 items each were prepared. The two books were equated by including in each: 1) approximately the same number of items of similar difficulty, 2) as nearly as possible an equal number of items from the four areas of subject matter, and 3) an equal number of the four possible positions of the test picture. The items in each book were arranged in order of difficulty progressing from the easiest to the most difficult.

The tests were then administered to a group of 175 children, living in the same city, and enrolled in either public school preschools, kindergartens and first grades, or in W. P. A. Nursery School groups. Subjects were selected to provide a sample roughly stratified as to age and socio-economic status. Approximately equal numbers were chosen from (a) the three twelve months age intervals included within the age range three years, six months, to six years, six months, (b) the six major socio-economic groups as classified on the basis of the occupation of the father according to the Goodenough (5) scale for urban populations.

The testing was done by the experimenter and one trained assistant. Since there was only one copy of the two test books, all the subjects did not receive the two tests in the same order, and the length of time between testings varied somewhat from subject to subject. The majority of the group received both tests within a two day period, while twenty-nine did not receive the second test for an interval of between five and fourteen days.

The test responses of 55 of the subjects used in the initial experimentation were included in the final analysis of the data. This procedure, though open to criticism, was adopted because intelligence test scores were available on most of these children and furthermore, additional subjects were needed from the upper socio-economic groups.

Evaluation of the Results

The major purpose of the statistical evaluation was to obtain estimates useful for subsequent refinement and improvement of the test. However, certain measures of reliability and validity of the test in its present form were also obtained.

Because of the rapid growth rates which are characteristic of most phases of development at these younger ages, the data were divided into two age groups for a portion of the analysis, one for children three and a half to five years, and the other for those of five to six and a half years. In the subsequent

discussion these divisions will be referred to as Group I and Group II.

When estimates were desired of socio-economic differences, or of the percentage of correct responses to items from age to age, the total group was divided into three socio-economic classifications by twelve months age intervals. The socio-economic groups are referred to as level A, made up of the professional and managerial occupational groups, level B composed of the small business and skilled labor classifications, and level C drawn from the semi-skilled and day laborer groups.

The Reliability and Validity of the Test in its Present Form

In estimating the reliability of the test, one of the formulas developed by Kuder and Richardson (7)[8] was used, since the coefficients resulting from it are known to yield a unique and stable estimate. The coefficients thus obtained were .92 for Group I, the younger aged children, and .95 for Group II, the older children. The number of cases, the mean scores, and the standard deviations of the two groups were as follows:

	N	Mean Score	SD	r
Group I	104	51.3	16.5	.92
Group II	126	84.0	17.4	.95

The presence of a certain amount of "dead timber" in the testing material may have made these correlations spuriously high. That is, there were many items too difficult for the younger children which were failed consistently, and similarly a number of very easy items on which the older children succeeded with regularity.

Objective measures of the validity of a test are most difficult to obtain, and constitute one of the major problems of the test constructor. The estimates used in this analysis were, a) the correlations between the test scores and other measures of growth and ability, such as chronological age and mental age, b) the correlation of the test scores with teachers' estimates of the subject's informational background, c) the ability of the test to discriminate between groups of children believed to differ in ability, and d) the regularity of increase in the percentage of children responding correctly to the individual test items from age group to age group.

Correlations significant at the one per cent level of confidence were obtained between total test scores and chronological age for the two main age groups; r = .44 for the 102 younger subjects and .28 for the 128 older children. Likewise for mental age and total test scores, the correlations computed on 32 Group I and 20 Group II children were significant at the one per cent level of confidence; r = .81 and .58 respectively. In both comparisons the magnitude of the coefficients was somewhat lower for the older groups. Examination of the scatter diagrams indicated that this difference might be due in part to the fact that for some of the older children the ceiling of the test was reached.

b. *Teacher's estimates of informational background of the children.* Estimates of pupil informational background were secured from the teachers of three intact school groups. A five point rating scale was submitted to the two teachers in each school group. The scale was designed to evaluate the amount of information possessed by each child in relation to the members of his own school group. Correlations were computed for the inter-teacher agreement as well as for the relationship between the combined ratings of the teachers in each school group and the total scores of the children rated.

A fair inter-teacher agreement, as well as a substantial correlation between scores and teacher ratings, was obtained for one set of teachers. The coefficients are summarized below:

	Inter-teacher agreement r	Test scores and teacher ratings r	Age range of children
School I	.85	.37	3–8 to 5–8
School II	.53	.11	4–5 to 5–4
School III	.65	.79	5–2 to 6–3

[8] $r_{tt} = \frac{n}{n-1} \cdot \frac{\text{Variance of the test} - \text{Sum pq.}}{\text{Variance of the test}}$ Where r_{tt} refers to the correlation between the test and a hypothetical equivalent form, the variance of the test refers to the variance of the total scores, and Sum of pq is the variance of the individual items.

Examination of the ratings of the teachers who did not agree well with the total scores and subsequent conversations with some of the teachers showed that certain factors were operating which would tend to reduce the degree of agreement. In both School I and II the teachers apparently rated a child as being poorly or well informed for children of the same age, and not as he compared with the rated group.

c. *Discrimination between ability levels.* It has been well established that, for the population as a whole, children tend to differ in intellectual ability according to the occupational level to which their fathers belong. Since neither intelligence test scores nor teachers' estimates of ability were available for the majority of the subjects it was decided to use parent occupational classifications as a rough measure of children's ability level. This procedure seemed practicable since a concerted effort had been made to construct the information test in such a manner that no socio-economic group would be penalized by factors associated with membership in any one such group. In making the comparison between the different socio-economic groups a simple analysis of variance was done for each of the three socio-economic levels divided into three twelve months age groups. For each age group the F ratio was significant at the one per cent level of confidence, using the variance between socio-economic groups and within socio-economic groups in calculating the ratio. This indicating test differentiated between groups.

Since the F ratios were significant, in each case t tests were applied to the mean scores of the socio-economic levels in the three age groups. As may be seen from Table No. I, in all but two of the comparisons made, the t tests indicated differences significant at the one per cent level of confidence, favoring the higher of the two socio-economic groups in question. The scores of the 3–6 to 4–6 year old children, from socio-economic level A were not significantly different from the scores of the middle group, while the differences between these same socio-economic classifications at the level 4–6 to 5–6 were significant at the five per cent level of confidence.

d. *Increase from age group to age group in the number of children responding correctly to the individual test items.* For all but three of the test items, a regular increase in the percentage of correct response was found, for the total sample, with increase in chronological age. Within the socio-economic groups reversals in the percentage passing were found in a number of items but the number of cases

TABLE 1

THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEAN SCORES OF THE THREE SOCIO-ECONOMIC LEVELS FOR EACH TWELVE MONTHS AGE GROUP

Age Group 3 yrs., 6 mos., to 4 yrs., 6 mos.

S. E. Level	N	Mean Ca	Mean Score S-E A	Mean Score S-E B	Mean Score S-E C	DF	T	Level of Significance
A	17	47.9	55.29	50.58	----------	44	1.1168	30%
B	29	49.1	----------	50.58	35.33	48	4.6002	1%
C	21	49.0	55.29	----------	35.33	36	4.5366	1%

Age Group 4 yrs., 6 mos., to 5 yrs., 6 mos.

S. E. Level	N	Mean Ca	Mean Score S-E A	Mean Score S-E B	Mean Score S-E C	DF	T	Level of Significance
A	30	60.7	80.40	71.60	----------	48	1.9951	5%
B	20	61.0	----------	71.60	47.90	39	5.3034	1%
C	21	57.9	80.40	----------	47.90	49	9.7400	1%

Age Group 5 yrs., 6 mos., to 6 yrs., 6 mos.

S. E. Level	N	Mean Ca	Mean Score S-E A	Mean Score S-E B	Mean Score S-E C	DF	T	Level of Significance
A	32	72.2	96.68	85.26	----------	75	3.3795	1%
B	45	73.2	----------	85.26	68.00	60	3.9630	1%
C	17	71.4	96.68	----------	68.00	46	6.2094	1%

included in the different classifications was relatively small. More detailed discussion of this part of the analysis will be given later.

Statistical Measures Used to Guide Improvement of the Test

For improvement of the test, certain measures were employed to facilitate discovery of the test items which contributed most to the discriminative power of the test, and also those which were suitable in difficulty for the age groups studied.

The generally accepted procedure for determining the difficulty of an item was used, that of finding the percentage of a particular age group who pass it.

Discriminatory power, that is, those items which differentiate the members of the population who rank high in the quality being measured from those who rank low in this respect, was measured in two ways. For one, the criterion of rank in ability was based on the total scores of the subjects; in the other the factor of relative chronological age was taken as an indication of ability. The latter measure requires the assumption that the quality being measured increases with age.

There are a number of methods of estimating the discriminative ability or validity of the items in a test in terms of their relation to the total scores made by the subjects. The index resulting from the use of biserial r is generally accepted as the best of the indices now in use because, according to Lindquist and Cook (9), it has a low correlation with the difficulty of an item, and in addition it makes use of all the data. However, the time involved in its computation does not warrant its use except in cases where a very refined estimate is needed. Because no criterion measure of information exists which is independent of this test and since this test did not seem to have reached such a stage of refinement, it was decided to use the technique of comparing the test responses of the upper and lower twenty-seven per cent of the group, and to employ the index developed by Flanagan (3). This index, briefly, is the product-moment correlation between the continuum (the test) and the responses of a bivariate population to an individual test item. Flanagan has constructed a chart from which the correlation coefficients of each item and the test can be read, if the percentages of correct response of the two extreme groups are known. In addition to the saving of computational time, this index has the advantage of being comparatively independent of the difficulty of the items, and further, results of this index have been found, by Flanagan, to compare closely with biserial r applied to the same data.

The discrimination indices were computed for each of the two age groups on the 118 items. The distribution of the indices for the two groups is given in the following table:

TABLE II

FREQUENCY DISTRIBUTION OF INDICES OF DISCRIMINATION IN GROUPS I AND II

Value of the r between the test item and the test	Group I	Group II
—.11 to .00	1	0
+.00 to +.09	4	0
+.10 to +.19	3	7
+.20 to +.29	18	3
+.30 to +.39	26	9
+.40 to +.49	24	21
+.50 to +.59	18	31
+.60 to +.69	17	35
+.70 to +.74	12	12
	118	118

It is evident from examination of these distributions that the indices were on the whole high and many of them were of sufficient magnitude to warrant use of the item for both age groups. For this research, a discrimination index of over .20 was considered to indicate adequate discrimination, though few items of this level were selected for retention in the test unless other factors indicated their value.

The second measure of item validity was found in the regularity and the sharpness of rise in the percentage of correct responses from age group to age group.

Inspection of the progression in the percentages passing an item at each twelve months age interval showed regular increases in the percentage of the total group passing in all but three instances. The increases, however, were not very large in many cases. When the data were broken down into the three socio-economic groups, quite sharp rises in percentage passing were found from age to age, but the ages at which these increases occurred were not the same for all three socio-economic groups. For example, for some items the percentage of children within the upper socio-economic levels who passed the

item might rise sharply between the ages 3–6 to 4–6 years and then level off, while for the lower socio-economic groups, a sharp rise for the item might not appear until a later age, or not occur at all in the age levels being considered.

For effective test construction it is recommended by Hawkes and Lindquist (5), Ruch and Stoddard (8), that test items should be included which differentiate within different levels of ability as well as between levels. Because the customary estimate of ability levels, that of school grades, is not open to those devising tests for the preschool ages, socio-economic status was used to serve the same purpose.

The selection of items to be recommended for further study was made on the basis of three factors:

1. The magnitude of the discrimination index.
2. The steepness of the percentage curve from age to age and for different socio-economic levels.
3. The difficulty of the item for the group.

An index of above .20 was considered necessary for the inclusion of an item in the test. In assigning the items to the proper age group, a minimum of twenty-five per cent of a given age group from at least one socio-economic level should have succeeded on a test item if it were to be left in the test. This figure was chosen since it was possible that twenty-five per cent of the group could pass an item by chance alone. Similarly an item was considered too easy for a given age group if more than seventy-five per cent of an age group in all socio-economic levels passed the item.

The same criterion as was applied to the percentage curves in the preliminary data was used in this part of the study, that of an approximately twenty per cent increase between age groups unless the upper limits of the item were reached at a young age level, or when an item did not begin to function until the older ages. A further refinement was necessary to include the socio-economic divisions. Thus, an item was retained in the test if a minimum of twenty per cent increase occurred between age groups for at least one socio-economic level.

A sample of test items is given below from each of the main areas of subject matter. The selection of these items has been such as to illustrate how the statistical criteria for choosing items were applied.

SCIENCE item

Test question

"From which of these do we get eggs to eat?"

Test pictures

1	2
White rats	Frog with white abdomen inflated
3	4
Two hens	Sea gulls feeding

Percentage passing

Age groups	Socio-Economic levels A N	A %	B N	B %	C N	C %	Total Group N	Total Group %
3½—4½ yrs.	17	82	29	72	21	57	67	70
4½—5½ yrs.	30	97	20	95	21	81	71	92
5½—6½ yrs.	32	97	45	100	17	94	94	98

Indices of discriminative ability of the item:

	r
Age Group I, 3½ to 5 years	.63
Age Group II, 5 to 6½ years	.30

This item was found to be most suitable for use with occupational levels B and C at the younger age levels.

COMMUNITY LIVING item

Test question

"How does water come to our houses?"

Test pictures

1	2
Postman delivering letters	Fire men with fire hose
3	4
Cart for heating tar	Water pipes exposed in ditch

Percentage passing

Age groups	Socio-Economic levels A N	A %	B N	B %	C N	C %	Total Group N	Total Group %
3½—4½ yrs.	17	35	29	45	21	5	67	30
4½—5½ yrs.	30	70	20	60	21	24	71	54
5½—6½ yrs.	32	88	45	73	17	53	94	74

Indices of discrimination

	r
Age Group I	.62
Age Group II	.61

This item was considered to be good for socio-economic levels A & B at younger ages and for level C at older ages.

Percentage passing

Age groups	Socio-Economic levels A N	A %	B N	B %	C N	C %	Total Group N	Total Group %
3½—4½ yrs.	17	59	29	55	21	43	67	52
4½—5½ yrs.	30	90	20	80	21	62	71	79
5½—6½ yrs.	32	94	45	92	17	88	94	95

GEOGRAPHY item

Test question

"Which do we use to show us the right road to take when we're on a trip in the car?"

Test pictures

1	2
Lamp post on street	Traffic patrol
3	4
Garden plan	Road map

Percentage passing

Age groups	Socio-Economic levels A N	A %	B N	B %	C N	C %	Total Group N	Total Group %
3½—4½ yrs.	17	24	29	31	21	14	67	24
4½—5½ yrs.	30	77	20	60	21	33	71	59
5½—6½ yrs.	32	88	45	84	17	35	94	77

Indices of discrimination

	r
Age Group I	.62
Age Group II	.74

This item was found good for socio-economic levels at A & B at the younger ages, and for level B at the older ages.

HOME LIVING item

Test question

"The food we sometimes eat without cooking it first."

Test pictures

1	2
Potatoes	Half of grapefruit
3	4
Cake	Beef steak uncooked

Indices of discrimination

	r
Age Group I	.43
Age Group II	.29

This item was considered to be good for all socio-economic levels at the younger ages.

When the test items had been evaluated according to the three criteria mentioned above, 61 were found to be suitable for the younger age group, and 76 for the older; 45 were common to both groups. The distribution of the items found to be discriminative within each of the three socio-economic level groups is summarized below.

Number of Items	Socio-economic Level	Age Group
19	All socio-economic levels	3½—5 yrs.
14	Socio-economic level A	3½—5 yrs.
16	Socio-economic level A & B	3½—5 yrs.
12	Socio-economic level B & C	3½—5 yrs.
61		
17	All socio-economic levels	5—6½ yrs.
13	Socio-economic level A	5—6½ yrs.
17	Socio-economic level A & B	5—6½ yrs.
29	Socio-economic level B & C	5—6½ yrs.
76		

Summary

The purpose of this research was to construct an achievement test of general information for preschool children 42–72 months of age, using as a nucleus those test items found suitable in four tests previously pre-

pared at the Iowa Child Welfare Research Station.

A method was developed whereby the test content could be evaluated in terms of its importance for the educational progress of children of these ages. Judgments were obtained as to 1) the social utility of the concepts underlying the test content, 2) the degree of relationship between test items and these concepts in terms of the level of information required, and 3) adequacy of the items in the test context.

Following preliminary testing of the items found acceptable through the rating procedure, the 118 best test items were presented to a sample of 175 children roughly stratified as to age, socio-economic status, and school placement.

The total scores of this sample and a portion of those obtained in the preliminary testing group were analyzed to obtain various estimates of the discriminative ability of the items and of the reliability and validity of the test in its present form. Certain criteria were set up to guide the selection of test items to be retained in the test, and 92 such items were found to meet these standards.

On the basis of the findings of this study, it was believed that, although more children would need to be tested to establish norms, the test materials at their present stage of development could be used with profit for children of the ages 48–66 months.

Because the ceiling of the test was reached by some of the children in the age group 5 years, 6 months, to 6 years, 6 months, and because the test appeared to be too difficult for many in the 3 year, 6 months, to 4 years group, it was recommended that the test items selected to be retained should be used only with children between the ages of 4 and 5½ years.

It is evident that before an information test may be made available for use with the entire age range of two to six years, more materials will need to be developed, and many more children tested. However, it is believed that the materials recommended to be retained in this test may now be used with profit for the age range suggested, and on the basis of these items, norms may be established for this limited age group.

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THE EFFECTS OF EARLY INSTITUTIONAL CARE ON ADOLESCENT PERSONALITY*

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This research resulted from a general interest in the phenomenon of infant deprivation and a particular interest in the infant institution as a case in point. In a previous study (4), a comparison was made of 40 children in foster homes, who had each spent about the first two or three years of their lives in an infant institution (institutional children) and 40 children whose total experience had been in foster homes (foster home children). It was clearly demonstrated that the children placed in foster homes after babyhood rearing in an institution evidenced greater frequency of problem behavior than did the children with continuous foster home experience. Further, the institution children showed more problems involving the overt expression of anxiety (restlessness, hyperactivity, inability to concentrate), the overt expression of aggression (temper display, impudence, destructiveness, failure to regard privacy rights, cruelty without cause, etc.) and affective impoverishment. It was inferred that the institution children were less secure, more isolated from other people and less capable of entering into meaningful human relationships.

In another study (5), it was shown that the institution children were more predisposed to poor adjustment in a foster home and to replacement as a result of unusual or deviating behavior. Indeed, this was the most common reason for the replacement of the institution children, while extremely rare in a foster home group. The problems that had precipitated the replacements in the institution group were threefold in character: (a) aggressive, hyperactive behavior, (b) bizarre, disorganized, unreflective behavior, and (c) emotional unresponsiveness.

In addition to the divergence between institution and foster family children in emotional and social adjustment, the institution children showed greater speech deficiency and more consistent school difficulty. The evidence also pointed to more frequent mental retardation among the children in the institution group.

The above described investigations leave one with the definite inference that the deprived infancy of the institution child resulted in a dramatic arrest in all aspects of his development and in the formation of a characteristically atypical type of personality. It is hypothesized that in the intellectual area the child is not only retarded by the specific handicaps of speech and informational limitation, but he is more fundamentally limited by a fixation on the most primitive levels of abstract or conceptual activity. The demands of experience appear to be met in a diffuse, unreflective manner. It is also hypothesized that this baby-like type of intellectual activity is one aspect of an equally immature, equally diffuse type of emotional organization. For example, the intellectual inferiority may be inseparable from specific traits such as restlessness, lack of persistence, lack of ambition, and disinterest in people or human relationship.

The present investigation was an attempt to elaborate and validate the implications of the above stated hypotheses regarding children whose infant experience has been in an institution environment. In addition, since the question of permanence of childhood pattern is of critical importance and since some of the more stable components of the adult personality are already well fixed in adolescence, a group of children in early adolescence were investigated.

The institution group consisted of 15 children, 8 boys and 7 girls. (Tables I and II) They ranged in age from 10 to 14 years (mean age 12 years and 4 months). They had entered the institution in very early infancy (mean age 4.5 months), had remained in the institution for about 3 years, and had then been transferred to foster homes where

* The New York Association for Jewish Children does not assume responsibility for the findings and judgments expressed herein.

TABLE I

PRESENT AGE, AGE ON ADMISSION, TOTAL TIME UNDER CARE (MONTHS) OF INSTITUTION AND FOSTER HOME CHILDREN

	Number	Present Age			Age on Admission			Total Time under Care		
		Mean	Stand. Dev.	Range	Mean	Stand. Dev.	Range	Mean	Stand. Dev.	Range
Institution	15	146.19	13.99	127–169	4.46	2.13	1–9	141.72	14.06	119–166
Foster Home	15	147.39	14.11	126–169	14.12	7.74	1–23	133.93	13.36	113–153

TABLE II

DISTRIBUTION OF TIME UNDER CARE OF INSTITUTION CHILDREN (MONTHS)

	Mean	Standard Deviation	Range
Age at Admission to Institution	4.46	2.13	1–9
Age at Transfer to Foster Home	43.02	4.76	36–50
Time Spent in Institution	38.56	5.88	27–47
Time Spent in Foster Home	103.16	16.75	86–131
Total Time Under Care	141.72	14.06	119–166

they had been reared up to the time of study. For most of their lives, therefore, they had been in foster homes; but the years of infancy had been spent in an institution.

These children were equated in terms of age and sex with 15 children who had always been with families. An attempt was made to find children who had entered foster homes at an age equal to that when the institution children entered the institution. This was not completely possible because the baby department in Foster Home Bureau was not yet old enough to supply an adequate adolescent population. On the other hand, every child in this group had always been with a family. They ranged in age from 10 to 14 years (mean age 12 years and 3 months). They had entered foster homes at a mean age of 14 months (range 1 to 21 months). Ten of the 15 children had become dependent after the age of 1 year and all had spent the period prior to placement with their own families. These children will be referred to as the foster home group.

FAMILY BACKGROUND OF THE CHILDREN

The children's records and the supervising caseworkers could offer little or no material about the fathers. Thus, present inferences regarding the children's background are necessarily drawn from information about the mothers. It was possible to obtain a reliable educational and occupational history of each of the mothers from their intake records. The national derivation of the mothers of institutional and family children is equivalent. There is also no reliable difference in educational history. In view of the direction of our hypotheses, however, it is a matter of some importance that the mothers of the institution children are significantly superior to the mothers of the family children in occupational background. Because of this one might even infer that the mothers of the institution children are also superior in intelligence. (Tables III and IV) It is apparent that hereditary background will be of negligible significance as a means of explaining any observed differences in favor of the foster

TABLE III

Birthplace of Mother	Institution No. of Children	Institution %	Foster Home No. of Children	Foster Home %
Russia, Poland, Austria	5	33	5	33
United States	10	67	10	67
Total	15	100	15	100

* In the tables that follow, P represents the percent probability that a divergence as large or larger than the one found could have occurred by chance. In the interpretation of results, a P less than 5% was accepted to mean that the observed difference was a reliable one.

TABLE IV

MATERNAL STATUS (MINNESOTA SCALES)

	Institution		Foster Home		Difference		t	P
	Mean Score	Stand. Dev.	Mean Score	Stand. Dev.	Institution Higher	Foster Home Higher		
Occupational Status	3.80	2.01	1.80	1.11	2.00		3.22	less than 1%
Educational Status	2.73	1.10	2.26	.71	.47		1.40	between 10% and 20%

home group or to the disadvantage of the institution group.

The basis for superiority in vocational background of the institution group is explained by the intake process. Intake workers who were interviewed maintained that the institution was a more common resource where parents demonstrated social and economic competence and where there was some basis for anticipating that the child might soon be returning to his own parent. Foster homes were more likely to be used for infants where the parents were particularly incompetent and there was a clear need for permanent care. This tendency is reflected in the reasons for placement. (Table V) There are more children in the institution group who were born out of wedlock. In contrast there are more children in the foster home group who were placed because of breakdown in the family constellation (neglect, paternal desertion, death of mother, physical illness of mother, mental illness of mother). It might be mentioned that more of the mothers of the foster home children have been diagnosed as psychotic. In addition, a review of their family experiences before placement reveals that most of the children in the foster home group were with their own mothers till placed and had been living in markedly unsatisfactory, unstable circumstances.

THE FOSTER HOMES

The two groups of children are not discriminated insofar as number of replacements and time of last placement are concerned. (Tables VI and VII) It may be assumed, therefore, that difference in continuity of foster home experience was not a factor in any psychological differences between both groups.

The objective characteristics of each child's foster home were analyzed in detail and rated on the Minnesota Urban Home Status Index.

TABLE V

Reasons for Dependency	Institution No. of Children	Institution %	Foster Home No. of Children	Foster Home %
B. O. W.	11	73	5	33
Neglect			1	7
Death of Mother			2	13
Physical Illness of Mother	1	7	1	7
Mental Illness of Mother	1	7	3	20
Father Deserted	2	13	3	20
Total	15	100	15	100

TABLE VI

NUMBER OF REPLACEMENTS

	Institution No. of Children	Institution %	Foster Home No. of Chilrden	Foster Home %
0, 1	8	53	7	47
2, 3	5	33	6	40
4 and over	2	13	2	13
Total	15	99	15	100

$Chi^2 = .16$ P bet ween 90% and 95%

TABLE VII

DURATION OF LAST PLACEMENT

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Below 5 years	2	13	2	13
Above 5 years	13	87	13	87
Total	15	100	15	100

TABLE VIII

FOSTER HOME STATUS

	Institution		Foster Home		Difference		t	P
	Mean Score	Stand. Dev.	Mean Score	Stand. Dev.	Institution Higher	Foster Home Higher		
Children's Facilities	42.36	3.31	40.40	4.21	1.96	.....	1.49	between 10% and 20%
Economic Status	52.75	4.36	49.02	14.24	3.73	.....	.97	between 30% and 40%
Cultural Status	34.43	2.83	33.23	2.92	1.20	.....	1.17	between 20% and 30%
Sociability Status	42.62	3.48	39.23	12.46	3.39	.....	1.01	between 30% and 40%
Occupational Status	4.20	1.22	4.60	1.92	.....	.40	.70	between 40% and 50%
Educational Status	2.46	.84	2.76	1.43	.....	.30	.72	between 40% and 50%

(Table VIII) There is no difference between the foster homes of both groups in regard to children's facilities, economic status, cultural status, sociality, occupational status, and educational status. The cultural milieu and the possibilities for individual stimulation were thus similar for both institution and foster home groups.

To evaluate subjective aspects of the foster family experience, the case records were studied and the children's caseworkers interviewed. The satisfactoriness-unsatisfactoriness of the foster parent-child relationship for each child and the degree to which the foster family had assimilated the child were rated jointly with the child's caseworker on a five point scale. The scales were as follows:

A. Satisfactoriness-unsatisfactoriness scale.

As satisfactory as could be expected.
Satisfactory.
Neutral.
Unsatisfactory.
Outstandingly unhappy.

B. Degree of assimilation scale.

Foster family accepts child as completely as it would one of its own children.
Foster family includes child in all family considerations, but child is not completely assimilated into family.
Neutral.
Foster family tends to view child as an outsider.
Foster family has marked feeling that child is an outsider. Home is conspicuously a "boarding" home.

In the actual statistical computation of group differences in each scale, the children were grouped into two categories as follows:

A. Satisfactoriness-unsatisfactoriness scale.
1) As satisfactory as could be expected, satisfactory.
2) Neutral, unsatisfactory, outstandingly unhappy.

B. Degree of assimilation.
1) Complete or partial assimilation.
2) Neutral or unassimilated.

The children of both groups are equally well assimilated into the foster families. Similarly, there is no difference between both groups in the satisfactoriness of the foster parent-child relationship for the particular children involved. (Tables IX and X)

TABLE IX

SATISFACTORINESS–UNSATISFACTORINESS OF FOSTER PARENT–CHILD RELATIONSHIP

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Very Satisfactory, Satisfactory	12	80	13	87
Neutral, Unsatisfactory, Outstandingly Unhappy	3	20	2	13

$Chi^2 = .24$ P between 50% and 70%

TABLE X

DEGREE OF ASSIMILATION BY FOSTER HOME

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Complete or Partial Assimilation	14	93	15	100
Neutral or unassimilated	1	7	0	0

$Chi^2 = 1.00$ P between 30% and 50%

METHODS OF INVESTIGATION

Each child received a comprehensive series of individually administered tests, interviews and ratings. Following are the aspects of personality investigated and the methods employed for their investigation.

I. Intellect.
  A. Intelligence.
    1. Wechsler–Bellevue Intelligence Test.
    2. Ellis Visual Designs Test.
  B. Level of conceptual performance.
    1. Vigotsky Test of Concept Formation.
    2. Weigl Color-Form Test.
    3. Wechsler Similarities Test.
    4. Wechsler Block Design Test.

II. Personality.
  A. Ratings based on test behavior.
  B. Ratings based on behavior in a frustrating situation.
  C. Ratings based on caseworker evaluation of the child's general adjustment and his capacity for human relationship, and the caseworker's observation of problem behavior.
  *D. Rorschach Examination.
  *E. Graphic Rorschach Examination.

III. Educational Achievement.
  A. Metropolitan Achievement Tests.
  B. School Record.

IV. Social Maturity.
  A. Vineland Social Maturity Scale.

V. Speech.
  A. General estimate rating.
  B. Fluency rating.
  C. Recording of diction errors.

* The Rorschach results will be reported separately.

The most objective investigative devices were the tests of intelligence, concept formation and educational achievement, the social maturity scale, some of the ratings on reaction to the frustrating situation and the Rorschach Examinations. Subjectivity was a definite factor in the evaluation of speech, the ratings of test behavior, and the ratings of personality based on case history and the caseworkers' experience. However, subjectivity was minimized by clear statement and understanding of the meaning of each rating and, especially, by extensive experience in the observation and rating of adolescents in situations similar to those employed in study. In addition, we were most particularly interested in obtaining data regarding the children that could be termed valid and meaningful. Opinions of the caseworkers, therefore, were sought since they were trained to be interested in and to understand personality tendencies and particularly since they had known the children for a minimum of six months. They were thus well acquainted with the children's patterns of behavior. Similarly, the ratings of the children's test behavior and their behavior in a frustrating situation were valuable since they were judgments of integrated reactions in real, life-like situations.

STATISTICAL METHODS

Where the numerical data were characterized by continuity and where we were interested in comparing the results with the normal population, we estimated averages. For determining the variance of the data and for

evaluating the reliability of differences, small sample theory was employed. In most cases, however, we were only concerned with determining differences between the experimental group. In addition, since much of the data was of a non-continuous nature, the Chi^2 method of testing for reliability of statistical association was generally deemed most applicable to the data.

I. Intellect

A. *The Intelligence Test Results—Wechsler–Bellevue Intelligence Test*

The Wechsler–Bellevue Intelligence Test was employed since it provides estimates of verbal and non-verbal abilities, and since it consists of 11 homogeneous items of psychological interest. (Tables XI and XII)

The institution group is inferior to the foster home group in both verbal and non-verbal results. The mean I. Q. (full scale) of the institution group is 72.39, which is in the borderline range; while the mean I. Q. of the foster home group is 95.37 which is in the normal range. Table XII follows Wechsler suggestions regarding interpretation of the results. All children with I. Q.'s of 90 or less are below average. All with I. Q.'s above 90 are classified as average or better. If we employ the full I. Q. for purposes of comparison, it is striking that 100% of the institution children are below average in intellectual performance in contrast to 40% of the family children. Equally marked differences are to be found in the verbal and performance areas. There is a clear association between retarded intellectual performance and institutional experience in infancy.

The Ellis Visual Designs Test

The development of the visual motor function parallels general mental development. In tests of general intelligence, therefore, items involving the reproduction of visual configurations have long been popular. It is also generally recognized that factors of motivation and neurological organization are operative in the process of perception. At this point, the results with the Ellis Visual Designs Test are offered to give further evidence regarding general maturation of the children in the experiment. (Table XI) This test requires the reproduction of ten designs following a five second presentation of each design.

The institution children are inferior to the foster home children in reproduction of visual designs. This inferiority, without doubt, is associated with inferiority in intellectual functions such as the ability to employ motor responses in controlled, concentrated, goal directed fashion, or the ability to organize conceptual patterns out of experience. The extremely meager, uncritical responses by some of the institution children suggest the

TABLE XI

INTELLIGENCE TEST RESULTS (A)

Test	Institution Mean I. Q.	Institution Stand. Dev.	Foster Home Mean I. Q.	Foster Home Stand. Dev.	Difference Institution Higher	Difference Foster Home Higher	t	P
Wechsler Bellevue								
Verbal	74.26	11.26	96.44	10.09	.....	22.18	5.69	less than 1%
Performance	76.66	13.82	94.97	10.99	.....	18.31	4.02	less than 1%
Total	72.39	10.45	95.37	9.05	.....	22.98	6.43	less than 1%
Ellis Designs	4.40	2.19	7.09	1.53	.....	2.69	3.95	less than 1%

TABLE XII

INTELLIGENCE TEST RESULTS (B)

Test	I. Q. Below 90 Institution No. of Children	I. Q. Below 90 Institution %	I. Q. Below 90 Foster Home No. of Children	I. Q. Below 90 Foster Home %	I. Q. Above 90 Institution No. of Children	I. Q. Above 90 Institution %	I. Q. Above 90 Foster Home No. of Children	I. Q. Above 90 Foster Home %	Chi^2	P
Wechsler-Bellevue										
Verbal I. Q.	14	93	3	20	1	7	12	80	16.42	less than 1%
Performance I. Q.	14	93	4	27	1	7	11	73	13.88	less than 1%
Total I. Q.	15	100	6	40	0	0	9	60	12.86	less than 1%

possibility of impulse disturbances. (After Bender (1)) The latter will be more pointedly discussed later, however.

B. *Level of Conceptual Performance*

Intelligence tests require the application of intelligence to the solution of defined problem situations. The results are ordinarily described in terms of a single quantitative score and the judgments regarding intelligence are inferred from this score. The only possible inference from this single score, however, is general level of intelligence, relative to the total population. We are told nothing regarding the qualitative and unique aspects of each individual performance. Nor, for example, does it help us to discern differences in mental approach of two individuals with equal numerical test rating.

Recently, there has been a growing interest in categorical behavior or the ability to form abstract concepts. Concept formation has been described as "the seeing of the common essential factor in a variety of things".(10)

Goldstein and Scherer (6) have given detailed consideration to the "abstract attitude" which they contrast with the "concrete attitude". They see both as "capacity levels of the total personality" which operate in all aspects of activity. In his approach to life adjustments, the normal person is able to assume both attitudes while the abnormal individual (for example, the schizophrenic or the individual with intracranial organic injury) is limited to the concrete attitude.

The concrete attitude is passive, unreflective and unreasoning. Behavior is directed by "the immediate claims which one particular aspect of the object or of the outer world situation makes".(6) Such behavior may be rigid and inflexible; or, in its passivity, it may be open to all stimuli in the environment and may be characterized by distractability as well as paucity of thought content.

The abstract attitude, on the other hand, shows itself in active reasoning and hypothezation, in a self critical awareness of one's activity and an ability to account for one's behavior. According to Goldstein(6), the "conscious" and "volitional" aspects of the abstract attitude are manifested in the ability

1. "To detach our ego from the outer world or from inner experience.
2. To assume a mental set willfully and consciously.
3. To account for acts to oneself; to verbalize the account.
4. To shift reflectively from one aspect of the situation to another.
5. To hold in mind simultaneously various aspects.
6. To grasp the essential of a given whole; to break up a given whole into parts, to isolate and to synthesize them.
7. To abstract common properties reflectively; to form hierarchic concepts.
8. To plan ahead ideationally; -------- and to think or perform symbolically."

It is apparent that any difference between both experimental groups in level of concept formation will not only give us insight into differences in approach to probable solution but may also clarify divergencies in emotional maturation and personality organization.

Description of Tests of Concept Formation

Concept formation was tested by the Weigl Color Form Test, the Vigotsky Test, the Wechsler–Bellevue Similarities Test, the Wechsler–Bellevue Block Design Test, and a special variation of the block design test as introduced by the author in this study.

The Weigl Color Form Test determines whether the experimental subject is able to sort a given variety of differently colored figures according to the two possible categories of color and form. There are twelve figures of equal size consisting of four equilateral triangles, four squares and four circles. One of each of these figures is colored red, green, yellow and blue. The subject is first told to sort all those figures that belong together. After the figures have been sorted for either color or form, the subject is required to sort them again in "a different way". In this experiment, the Zubin and Thompson directions(12) for administration and scoring of the test were followed. (For a detailed description of the abstract and concrete approaches to the test, see Goldstein and Scherer(6).)

The Vigotsky Test consists of 22 small blocks varying in color, shape, and size. The subject is required to sort the blocks in four groups so that the blocks in each group are alike for some reason. A description of the blocks is given by Hanfmann and Kasanin(7). I found the Zubin–Thompson directions(12) for administration and scoring most explicit

and of greatest value. The test is considerably more difficult than the Weigl test. In spite of its difficulty, however, I did find this test could discriminate the groups of adolescents studied.

The Similarities test employed is one of the 11 tests in the Wechsler–Bellevue Scale. The subject is asked in what way a series of paired objects are alike. These objects are common in our experience; for example, orange and banana. The scoring gives pointed recognition to levels of conceptualization so that the test is an excellent measure of verbal abstraction.

The Block Design Test is also one of the Wechsler–Bellevue Scales. The subject is required to reproduce designs with blocks. Clinicians have always recognized the value of this test for measuring the presence or loss of abstract or synthesizing ability. (See Wechsler(11) and the special adaptation of the test by Goldstein and Scherer(6).)

The Bellevue Block Design Test is a timed test which gives credit for rapid performance and conversely may penalize the individual who is slow although he is capable of conceptual performance. In any case, the time factor appears irrelevant in a study of the "abstract attitude". The following test was, therefore, devised. The time limit for completion of each of the designs was extended to five minutes. Each of the Block productions was scored on the following scale:

Credit 0—Completely random grouping. There is no reflection or analysis at all. The subject is passively guided by impulse alone, does not even observe color sequence, and is willing to accept the patently irrelevant product.

Credit 1—The configuration is vaguely perceived and inadequately analyzed. There is reaction to color sequence. There is apparent effort at analysis and, at times, perplexity in reaction to the poor results.

Credit 2—a. The configuration is correctly analyzed and resynthesized except that, because of impulse, one block is incorrectly placed. b. Although incomplete, more than half of a design is correctly reproduced within the five minute time limit.

Credit 3—Complete design correctly reproduced within the five minute time limit.

The total score is the sum of credits on all the designs. The test consists of seven designs and according to our method of scoring the maximum score is 21.

The Abstract Test Results

Weigl Color Form Test. The foster home children received superior ratings on total performance in the Color Form Test. (Table XIII) A comparison of the two experimental groups, however, in regard to number of categories successfully sorted by the children is also of interest. (Table XIV) Ten of the institution children could not sort the figures into any category while an equal number of the foster home children successfully sorted the figures into both categories. After the demonstration, all but one of the foster home children, who did sort one of the categories, sorted for both categories. In contrast, four of the institution children still were completely unsuccessful even after the demonstration.

The institution children are quite obviously inferior to the foster home children in level of concept formation as measured by the Weigl Color Form Test. Further, the institution children's particular mode of handling the problem indicates such marked concreteness that it might be described as abnormal and, following ordinary clinical experience,

TABLE XIII

CONCEPT FORMATION TESTS

	Institution		Foster Home		Difference		t	P
	Mean Score	Stand. Dev.	Mean Score	Stand. Dev.	Institution Higher	Foster Home Higher		
Weigl	2.40	2.44	6.79	1.96	----------	4.39	5.49	less than 1%
Vigotsky	.53	1.60	4.66	2.35	----------	4.13	5.66	less than 1%
Bellevue Similarities	3.46	2.20	6.59	2.06	----------	3.13	4.01	less than 1%
Bellevue Block Design	3.80	1.86	7.73	2.22	----------	3.93	5.24	less than 1%
Revised Block Design	9.92	4.02	17.72	2.58	----------	7.80	6.34	less than 1%

TABLE XIV

WEIGL TEST RESULTS

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Initial Trial				
2 Successes	2	13	10	67
1 Success	3	20	3	20
0 Success	10	67	2	13
$Chi^2 = 10.65$ P less than 1%				
Post Demonstration Trial				
2 Successes	5	33	14	93
1 Success	6	40	1	7
0 Success	4	27	0	0
$Chi^2 = 11.83$ P less than 1%				

pathological. Thus, the institution children showed an unusual tendency to build ornamental patterns with the figures (Table XV). These patterns were not built on the basis of preconception or planning but simply arose as the subject worked randomly with the figures. The patterns were in accord with the Gestalt principles of balance, symmetry, and closure; and the children could not explain the basis for the structures. In previous experimentation, such atypical concreteness was found only in extreme pathology, that is, as an expression of a schizophrenic process or of intracranial injury. (See 6)

Vigotsky Test. The results with the Vigotsky Test confirm the relative inferiority of the institution children in concept formation. (See Table XIII) All but two of the institution children received zero ratings while all but two of the foster home children received more than zero ratings. (Table XVIII)

An analysis of the children's ability to hypothesize, generalize or benefit from a demonstration is found in Table XVIII. The foster home children showed a superior capacity for hypothesizing and acting on an inductive basis. As many as six of the institution children could not initiate any hypothesis. Their sorting behavior might be described as unreasoned. There is a definite relationship between belonging to the institution group and unreflective behavior or the inability to hypothesize.

Similarly, the institution children were distinctly inferior in regard to generalization capacity after the sorting was completed. Indeed, in contrast to the foster home group, no institution child could enumerate or generalize the basis for sorting.

The limitation in abstract performance is so extreme that even after demonstration and explanation, the institution children still had more difficulty in sorting and generalizing.

The Similarities and Block Design Test. The inferences from the Weigl and Vigotsky experiments are confirmed by the results with the Similarities Test, The Wechsler–Bellevue Block Design Test and the author's adaptation of the block design test. (Table XIII) The same trends to passivity and unreasoned behavior were observed in these tests.

Comparison with Defective Children

Through the cooperation of the Menninger Clinic it was possible to compare the institution and foster home children with a group of 28 defective children between the ages of 11 and 14 on the Weigl Color Form Test.

TABLE XV

WEIGL TEST RESULTS—PATTERNING

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Patterning Present	10	67	3	20
Patterning Absent	5	33	12	80
$Chi^2 = 6.65$ P less than 1%				

TABLE XVI

WEIGL TEST RESULTS

No. of Successes	Institution No. of Children	%	Menninger Retarded No. of Children	%
0	10	67	2	7
1	3	20	17	61
2	2	13	9	32

$Chi^2 = 16.91$ P less than 1%

TABLE XVII

WEIGL TEST RESULTS

No. of Successes	Foster Home No. of Children	%	Menninger Retarded No. of Children	%
0	2	13	2	7
1	3	20	17	61
2	10	67	9	32

$Chi^2 = 6.34$ P less than 5%

TABLE XVIII

VIGOTSKY TEST RESULTS

	Institution No. of Children	%	Foster Home No. of Children	%	Chi^2	P
Number of hypotheses or possibilities attempted						
A. More than three possibilities	0	0	4	27		
B. Three possibilities	0	0	5	33		
C. Two possibilities	3	20	4	27		
D. One possibility	6	40	2	13		
E. No hypothesis used	6	40	0	0		
					17.14	less than 1%
Type of generalization of concept						
A. Correct double dichotomy after sorting	0	0	1	7		
B. Correct double dichotomy after comparisons	0	0	2	13		
C. Attributes enumerated	0	0	6	40		
D. Unable to enumerate or generalize the basis for sorting	15	100	6	40	Infinity	less than 1%
After double dichotomy is demonstrated and described by examiner						
A. Can repeat performance and state dichotomy	1	7	7	47		
B. Can repeat performance and enumerate attributes	0	0	6	40		
C. Can repeat performance but cannot generalize or enumerate attributes	3	20	1	7		
D. Cannot repeat performance	11	73	1	7		
					17.03	less than 1%
Zero rating for total performance	13	87	2	13		
More than zero rating for total performance	2	13	13	87	16.16	less than 1%

(Tables XVI and XVII) The institution children are even inferior to defective children in this test, while the foster home children are superior. We have striking confirmation of the hypothesis that the abnormal concretivity of the adjustment of the institution children is more than a reflection of low intelligence. There appears to be an unusual primitivization of the total personality, which is also manifested in the perceptual and conceptual development of the institution children.

II. Personality Data

Test Behavior

In the course of the experiment the author had the opportunity to observe each child individually for a period ranging from 5 to 7 hours. On the basis of these observations, each child was judged in eleven qualities that could be described in behavioral terms and which were significant for the experiment. The Trait Descriptions of the California Behavior Inventory were of great aid(3). As in the California Inventory, each trait was rated on a seven point scale where score 1 meant that a child was extremely high in the trait, score 7 meant child was extremely low in a trait, and a score 4 that the child was average for his age in the trait. For purposes of estimating the reliability with which the traits were associated with the two groups, a fourfold contingency table was employed and the groups were compared in the number of children above or below selected levels in each trait.

The trait descriptions and their appropriate symbols are presented below:

1. Friendliness to the examiner.
   - (1) Shows an open friendliness; quick to make clearly friendly approaches, shows a prompt willingness to become friendly.
   - (4) Average. Friendliness depends somewhat on mood, the approaches of the examiner, etc.
   - (7) Stands off; is either uninterested, or suspicious, antagonistic, etc.

2. Restlessness
   - (1) Child cannot stand or sit still with self possession; is exceptionally restless.
   - (4) Average self possession when sitting, standing, watching, etc.; average restlessness.
   - (7) Child can sit or stand still with exceptional absence of childish restlessness.

3. Sustained Effort
   - (1) Child is capable of exceptionally sustained effort, even in a difficult or arduous task.
   - (4) Average maintenance of level of effort. Effort is better maintained where progress is fairly prompt and visible.
   - (7) Incapable of sustained effort. Effort quickly lags and deteriorates. Child leaves his work or play unfinished.

4. Ambition
   - (1) Child is ambitious. Is willing to try things that are hard to do.
   - (4) Average. Is fairly moderate in his undertakings and efforts.
   - (7) Child is exceptionally unambitious. Characteristically undertakes only what is easy.

5. Speed of Decision
   - (1) Child makes decisions and choices exceptionally quickly. Never inactive through lack of prompt decision as to what to do.
   - (4) Average speed of decision.
   - (7) Child is exceptionally slow in deciding or choosing; child is either deliberate or irresolute.

6. Finality of Decision
   - (1) Once the decision or choice is made, the child abides by it firmly. Does not change his mind, stop to try out the alternative, etc.
   - (4) Average. Child abides more firmly by his decisions or choices when they seem to be turning out favorably than otherwise.
   - (7) Child cannot really make up his mind. Fluctuates from one decision to another. Greatly lacks firmness or finality of decision.

7. Behavior Response to Difficulty
   - (1) Child tends to persist steadfastly, with undiminished energy, despite great difficulty or failure. Undiscriminatingly pertinacious.

(4) Average. Persists if the difficulty yields fairly promptly to his attempts, otherwise effort flags and child quits.

(7) Child falters quickly at difficulty, and quits too readily. Requires much encouragement to persist.

8. Behavior Response to Sympathy or Approval

(1) Child is strongly stimulated to greater or more persistent effort by sympathy or approval; sympathy and approval serve exceptionally efficiently as a means of motivating the child's behavior.

(4) Average. Sympathy and approval serve with average efficiency; will not prevent child from quitting a very difficult task, or induce him to do what he strongly dislikes.

(7) Ineffectual. Sympathy and approval fail to alter the child's behavior.

9. Apprehensiveness

(1) Child is obviously frightened at the prospect of an examination or test.

(4) Average. Child a little anxious for a brief time.

(7) Child is entirely carefree and unapprehensive.

10. Nervous Habits

(1) Shows numerous nervous habits (or marked addiction to one nervous habit), e.g. fidgets, bites nails, twitches face or shoulders, curls or twists hair, plays with mouth or face, etc.

(4) Average. Shows some nervous habits, under pressure.

(7) Free from all signs of nervous habits.

11. Thoughtfulness of Procedure in Problem Solution

(1) Child is extremely thoughtful and deliberative. Will not initiate a problem till he has carefully considered all possibilities and is very critical of each response. Makes few errors.

(4) Average. Child is thoughtful and self critical. Will not let obvious errors pass.

(7) Is exceptionally unreflective and intellectually passive. Will accept very poor responses and indulge in random, undirected behavior.

In Table XIX, the institution and foster home groups are compared in the eleven traits under consideration. The groups do not differ in friendliness, restlessness, finality of decision, and prevalence of nervous habits. The institution group is more fearful and apprehensive, and, in the examination, seems more removed as it is less responsive to sympathy or approval and shows a greater tendency to respond slowly. The tendency to slow response is not representative of deliberation. On the contrary, the institution children tend to be less thoughtful in problem solution, less ambitious, less capable of sustained effort, and more prone to quit a task that is difficult.

The Frustration Experiment

In large measure, personality traits are formed by the frustrating situations that every individual experiences in growing and they represent the individual's methods for meeting these frustrations. An experimental frustrating situation is thus likely to stimulate reaction patterns of the total child that might be of value in our study.

Based on a previous study of adults by Brown(2), the following experiment was devised. The child is presented with a problem for which there is only one possible solution. The child is encouraged or, if necessary, helped to find this solution. Then he is directed to find a second solution although a second solution does not exist.

Concretely, the experiment is as follows: A telephone with its receiver off the hook is on the floor. Immediately next to it is a low nursery table on which have been scattered some colored blocks and pictures. The child is required to put the receiver back on the hook. He is admonished, however, not to cross a line marked on the floor or to touch the floor beyond the line with any part of his body. The telephone is far enough from the floor line so that the only possible solution is to lean on the table and thus to employ it as a bridge to the telephone. Most of the children discover this solution very rapidly. If the problem is not solved after three minutes, a hint is offered; and after five minutes the solution is demonstrated. The child is

TABLE XIX

TEST BEHAVIOR

Trait	Trait Range	Institution No. of Children	Institution %	Foster Home No. of Children	Foster Home %	Trait Range	Institution No. of Children	Institution %	Foster Home No. of Children	Foster Home %	Chi²	P
1. Friendliness	1-4	11	73	12	80	5-7	4	27	3	20	.20	between 50% and 70%
2. Restlessness	1-3	2	13	2	13	4-7	13	87	13	87	.00	100%
3. Sustained effort	1-4	10	67	15	100	5-7	5	33	0	0	6.00	less than 2%
4. Ambition	1-4	5	33	14	93	5-7	10	67	1	7	11.61	less than 1%
5. Speed of decision	1-4	11	73	15	100	5-7	4	27	0	0	4.62	less than 5%
6. Finality of decision	1-4	13	87	12	80	5-7	2	13	3	20	.24	between 50% and 70%
7. Response to difficulty	1-4	6	40	14	93	5-7	9	60	1	7	10.00	less than 1%
8. Response to sympathy	1-4	6	40	14	93	5-7	9	60	1	7	10.00	less than 1%
9. Apprehensiveness	1-3	3	20	13	87	4-7	12	80	2	13	13.34	less than 1%
10. Nervous Habits	1-3	3	20	1	7	4-7	12	80	14	93	1.16	between 30% and 40%
11. Thoughtfulness in problem solution	1-4	4	27	14	93	5-7	11	73	1	7	13.97	less than 1%

then told that there is a second solution which he must discover. From this point on, the situation may be described as frustrating and there is careful observation of all behavior.

After five minutes, the following statement is directed to the child: "The second solution is much harder. Nearly everyone gets the first answer, but a little less than half get this one." After ten minutes of unsuccessful effort at solution, the subject is interrupted, and general conversation is initiated with the remark: "There are some matters I want to discuss with you. Lets talk about them now. Maybe, while you are talking, the solution of the problem will occur to you." A general discussion is held regarding the child's present feelings, his interests and school preferences. If the child does not return spontaneously to the task, at the end of three minutes, he is reminded that he has not finished the task. If he does not return to the task on reminder, he is directed to return to the task. If the child returns spontaneously or on reminder or on direction, additional interruptions are introduced at five minute intervals. After the third interruption of the experiment, the experiment is ended with the assurance that with more time the child could certainly have solved the problem. The child is then questioned in detail regarding any questions of blame or shame, and what his feelings were to the various aspects of the experiment.

The time for the experiment proper is about ½ hour and the additional discussion with the child on completion of the experiment consumes only several minutes. The experimental set-up is almost completely copied from Brown's experiment except that the child is subjected to briefer periods of frustration than were Brown's adults subjects.

The behavior ratings were also borrowed from Brown with slight variations, except for the addition of one item, that is, the tendency to violate the experimental prohibitions.

The behavior categories were rated as follows:

I. Method of resumption.

The score is derived from the frequency and manner of resuming the task after interruption. For each automatic resumption, the child receives a score of 4. For each resumption of the task on reminder by the examiner, the child receives a rating of 3. If a child resumes the task on direct request, the score is 2. If the subject refuses to resume the task, after interruption, the score is 1. The child's total score is the sum of ratings on each resumption.

II. Psychological Departure.

Flight from the situation as through daydreaming or attempting to engage the examiner in conversation, irrelevant to the task. A score of 5 is given if no such behavior is noted and 1 is subtracted for each illustration of such behavior. (Since some of the children were prone to stare into space and to daydream for long periods, 1 point was subtracted for each half minute of daydreaming.)

III. Tension.

Brown refers here to the tendency to develop disorganized or diffuse overt behavior as a reflection of internal tension. Tension was evaluated as follows:

1. Initial tension subsides.
2. No signs of increasing tension.
3. Slight increase in tension, as fidgeting.
4. Considerable increase in tension. Unable to sit still, continually playing with hands.
5. Extreme agitation, aggressive outbursts.

IV. Aspirations.

This refers to the child's pressure on himself to find the second solution. Each child was evaluated as follows:

1. Wishes to fail.
2. Is indifferent.
3. Would like to succeed.
4. Anxious to succeed.
5. Feels that he "must" succeed.

V. Effect of Competition.

The effect of the competitive factor occasioned by the suggestion that "a little less than half of the children succeed" is referred to. Each child is evaluated on his response to the suggestion as follows:

1. Aspiration falls.
2. Aspiration is unaffected "It made no difference".
3. Aspiration rises somewhat.
4. Aspiration rises sharply.
5. Child feels that he "must" succeed.

VI. Blame.

The child is asked if he experienced any shame or guilt or if he blames anyone for his failure. Brown's categories of response were found to be suitable, as follows:

N—Child experiences no guilt or blame feelings.
S—Child feels guilty, blames himself.
Situation—Child blames the examiner or the way in which the experiment is set up.
M—The question is not grasped by the child.

VII. Violation of Prohibition.

The child is prohibited from crossing the floor with his feet or touching the floor with any part of his body. In addition, after the first solution is reached, the table may no longer be used as a bridge. When any of these prohibitions is violated, the child is reminded of the prohibition. A record is kept of every violation.

A comparison of institution and foster home children in the items described above is presented in Tables XX through XXIII.

In evaluating the children's reactions to the frustrating situation, we were guided by our interest in possible group differences in:

a. Extent of ego involvement or apathy in a situation where factors of success and failure are conspicuous.
b. Will or drive to achieve or complete the given task.
c. Conformity to regulations or limiting conditions that have been set down prior to the initiation of the experiment.

The experiment is an excellent one for observing the child's demands on himself, the ease with which feelings of tension are aroused, the degree to which he responds to conditions of frustration, failure and competition—in short, the extent to which the child is personally involved in a situation that is similar in many respects to ordinary life adjustments. To determine differences in ego involvement the groups were compared in regard to rise in tension, effect of competition, and the existence of shame or guilt.

The behavior of the institution group in a frustrating situation contrasts sharply with the foster home group. It shows a distinct tendency to be unaffected by the total situation. More of the institution children were indifferent to success in the first place, but even more significantly more children in the institution group showed no rise in tension, were unaffected in any direction by competition and experienced no guilt or shame. If we use as a criterion of apathy the combination of absence of tension, absence of response to competition, and the absence of guilt or shame, then there are no apathetic children in the foster home group while 73% of the institution group may be characterized as apathetic.

A similar tendency is observed in a comparison of the manner of resumption. The foster home group shows a superior tendency to resumption of task after interruption. One may assume that the institution group is

TABLE XX

FRUSTRATION EXPERIMENT—RESUMPTION AND FLIGHT

	Institution		Foster Home		Difference		t	P
	Mean Score	Stand. Dev.	Mean Score	Stand. Dev.	Institution Higher	Foster Home Higher		
Resumption	2.53	2.17	5.59	3.25	.....	3.06	3.03	less than 1%
Psychological departure	2.73	2.28	3.93	1.75	.....	1.20	1.62	between 10% and 20%

TABLE XXI

FRUSTRATION EXPERIMENT—ASPIRATION

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Indifferent to Success	4	27	0	0
Want to succeed	10	67	8	53
Really must succeed	1	7	7	47

$Chi^2 = 8.76$ P less than 2%

TABLE XXII

FRUSTRATION EXPERIMENT—EGO INVOLVEMENT

	Institution No. of Children	%	Foster Home No. of Children	%	Chi^2	P
Tension						
1. Rise in tension	2	13	11	73		
2. No rise in tension	13	87	4	27	9.00	less than 1%
Competition						
3. Aspiration affected	0	0	13	87		
4. Aspiration unaffected	15	100	2	13	23.16	less than 1%
Guilt, shame						
5. Guilt, shame experienced	2	13	11	73		
6. No guilt or shame experienced	13	87	4	27	9.00	less than 1%
Apathy						
7. Presence of factors 2, 4, 6	11	73	0	0		
8. All 3 factors (2, 4,6) not present	4	27	15	100	17.36	less than 1%

TABLE XXIII

FRUSTRATION EXPERIMENT—REACTION TO PROHIBITIONS

	Institution No. of Children	%	Foster Home No. of Children	%
One or more violations	12	80	3	20
No violations	3	20	12	80

$Chi^2 = 10.80$ P less than 1%

characterized by a lesser will to achieve, to persist and to complete a difficult task.

Finally, the institution group shows a more significant tendency to violate prohibition. In short, both groups seem to approach the problem with equal degree of cooperation, but the institution child is emotionally more apathetic, is less concerned with success and less moved by failure or social competition, and he is more likely to disregard limitations or prohibitions. The institution child is thus adjusting on a more superficial level and is less motivated by ordinary social and human identifications.

Caseworker Evaluation

Capacity for Relationship. The caseworker of each child in the study was asked to give a descriptive statement of the child's capacity for relationships. Here we were referring to the child's ability to effect ties with other children or adults. The caseworker was required to base her observations on the caseworker-child relationship as well as foster family-child relationship. It was possible to differentiate three categories of relationship capacity, namely:

1. Normal or good capacity for relationship. The child is able to form ties as easily as normal children do and these ties are often of deep or lasting significance.
2. Slow capacity for relationship. The child is able to effect deep or lasting ties but is initially fearful and suspicious and must form new relationships slowly.
3. Removed in relationship. The child is emotionally withdrawn. Others in the family feel that the child is isolated and "cold" even after years in the family group. The caseworker experiences no personal engagement and finds it very difficult to hold more than very simple or superficial interviews with the child.

While thirteen of the institution children (87%) are described as removed, all the foster home children are either in the normal or slow categories. (Table XXIV) Thus it is the opinion of the supervising caseworkers that while some are fearful in regard to formation of ties, most of the foster home children are normal in this respect and all are capable of meaningful relationships. In con-

TABLE XXIV

CAPACITY FOR RELATIONSHIP

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Normal	2	13	12	80
Slow	0	0	3	20
Removed	13	87	0	0

$Chi^2 = 23.16$ P less than 1%

trast, most of the institution children are apathetic and withdrawn in their contacts with people. This difference is a reliable one. Casework experience, therefore, tends to verify the experimental indication of emotional apathy in the institution group.

General Adjustment. Each child's caseworker was then asked to indicate in which of the following three categories of adjustment she would place the child:

1. Normal—The child is well adjusted, has no serious problems and functions well at school, home and community. Emotional difficulties are either absent or adequately handled.
2. Mild problem adjustment—The child shows some problem behavior. His difficulties do not cause marked disturbance, however, either at home, school or community.
3. Poor adjustment—The child evidences marked emotional difficulties or severe problem behavior.

It is apparent that the institution group is more poorly adjusted than the foster home group. (Table XXV) Indeed, only one child (7%) of the institution group was described as normally adjusted while 10 children (67%) of the foster home group were so described.

Problem Behavior. Finally, the child's caseworker was asked to record on a check list of problem behavior, the problems that were characteristic of that child. Here again, there is confirmation of the conclusion that the institution group is less well adjusted than the foster home group, since the average institution child shows a greater number of problems than does the average foster home child. (See Table XXVI)

Now if we consider the individual problems (Table XXVII), the institution group shows a reliably greater tendency to exhibit the following problems:

Unpopular with other children
Restless, hyperactive behavior
Inability to concentrate
Poor school adjustment
Excessive craving for affection
Sensitivity
Fearfulness

TABLE XXV

ADJUSTMENT

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Normal	1	7	10	67
Mild Problem	5	33	3	20
Severe problem behavior or emotionally disturbed	9	60	2	13

$Chi^2 = 12.32$ P less than 1%

TABLE XXVI

PROBLEM BEHAVIOR—NUMBER OF PROBLEMS

Institution		Foster Home		Difference in Means	t	P
Mean	Stand. Dev.	Mean	Stand. Dev.			
6.53	2.80	1.87	1.88	4.65	5.34	less than 1%

TABLE XXVII

PROBLEM BEHAVIOR

	Institution No. of Children	%	Foster Home No. of Children	%	Chi^2	P
1. Unpopular with other children	6	40	1	7	4.64	less than 5%
2. Restless, hyperactive	9	60	1	7	10.00	less than 1%
3. Attention getting behavior	6	40	4	27	.60	between 30% and 50%
4. Quarrelsome in play	6	40	2	13	2.72	between 5% and 10%
5. Selfish in play	0	0	3	20	3.52	between 5% and 10%
6. Disobedient toward parent or teacher	3	20	2	13	.24	between 50% and 70%
7. Temper displays	4	27	3	20	.20	between 50% and 70%
8. Stealing	1	7	1	7	.00	100%
9. Truancy	0	0	1	7	1.00	between 30% and 50%
10. Poor school achievement	15	100	1	7	26.20	less than 1%
11. Craving for affection	9	60	2	13	7.04	less than 1%
12. Shy and seclusive	4	27	3	20	.20	between 50% and 70%
13. Food fads	1	7	0	0	1.00	between 30% and 50%
14. Sensitive	7	47	1	7	6.14	less than 2%
15. Inability to concentrate	10	67	0	0	15.00	less than 1%
16. Cry easily	3	20	0	0	3.52	between 5% and 10%
17. Fearful	8	53	1	7	7.76	less than 1%
18. Enuresis	3	20	0	0	3.32	between 5% and 10%
19. Restless in sleep	2	13	0	0	2.14	between 10% and 20%
20. Complains easily	1	7	2	13	.37	between 50% and 70%

These results confirm previous results with the same check list of problem behavior, as applied to a younger group of six and eight year olds.(4) In other words, the indications are that the institution child enters his foster home and community experience less well adjusted than the foster home group and remains so even through adolescence. Nor has it been possible to eradicate this divergence in spite of years of sober, individualized foster home service. The institution children remain more fearful. They are marked by their need for affection; yet, as noted previously, they are less able than the foster home children to participate in the spontaneous give and take of the normal human relationship. They demonstrate their lesser security in restless, hyperactive behavior, and in their inability to concentrate. The latter traits may also be related to the less mature and consequently less controlled, less differentiated personalities of the institution children. In any case, all the above problems, added to or even contributing to the lower intellectual output of the institution children, result in considerably worse adjustment in an area of practical performance like school.

III. School Adjustment

According to the check list of problem behavior, all the institution children evidence school difficulty. A more detailed examination of school history reveals that only 3 (20%) of the institution children are at grade, while 13 (87%) of the foster home children are at grade for their age. (Table XXVIII) In addition, 7 (47%) of the institution group are now in special classes and 11 (73%) are or were in special classes for retarded children. On the other hand, not one of the foster home children has ever been in a special class. (Table XXIX) The institution child is thus decidedly less proficient in school performance than the foster home

TABLE XXVIII

EDUCATION (A)

	Institution No. of Children	%	Foster Home No. of Children	%
At grade or advanced	3	20	13	87
Retarded	12	80	2	13

$Chi^2 = 13.39$ P less than 1%

TABLE XXIX

EDUCATION (B)

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Are or have been in special classes for retarded children	11	73	0	0
Have never been in special classes for retarded children	4	27	15	100

$Chi^2 = 17.36$ P less than 1%

TABLE XXX

EDUCATIONAL ACHIEVEMENTS

	Institution		Foster Home		Difference		t	P
	Mean Grade	Stand. Dev.	Mean Grade	Stand. Dev.	Institution Higher	Foster Home Higher		
Reading Comprehension	5.07	1.50	6.79	1.14	.....	1.72	7.16	less than 1%
Arithmetic Fundamentals	4.70	1.61	6.66	1.48	.....	1.96	3.89	less than 1%

child. This is expressed even more clearly in the average reading and arithmetic attainments of the children as measured by the Metropolitan Achievement Reading and Arithmetic Tests. (Table XXX) The average attainments of the foster home children in both reading and arithmetic are significantly higher than those of the institution children.

In the school area, therefore, one observes the very negative effect of the unique combination of personality and intellect that is characteristic of the institution child. One might anticipate an equivalent disparity between institution and foster home child in their possibilities for vocational adjustment.

IV. Social Maturity

The children were compared in regard to social maturity or the capacity for looking after themselves and for participating in those activities which ultimately lead toward adult independence. The Vineland Social Maturity Scale was employed and again the caseworkers were informants.

The mean social quotient of the foster home children is 98.97 while the mean social quotient of the institution children is 79.05. (Table XXXI) The average social maturity of the foster home group is thus within normal ranges while the average social maturity of the institution group is retarded. The foster home group is reliably superior to the institution group in this important quality. It is striking that whereas the institution children are taught to do a great deal for themselves as infants in the way of self care, in adolescence they may be described as socially immature. In any case they are inferior in this respect to the foster family children who, without doubt, had had less responsibility for self care as infants.

V. The Speech Results

In the previous study of six and eight year olds(4), the institution and foster home children were compared in regard to the existence of speech deficiencies. (Table XXXII) The great majority of the institution children in the six year group showed speech deficiencies. The greater association between speech defect and institutional experience in infancy is statistically reliable in this group. However, no divergence was found in the eight year group. With Lowrey(9), it was assumed that the marked speech delay in the six year group,

TABLE XXXI

SOCIAL MATURITY—VINELAND SCALE RESULTS

Institution		Foster Home		Difference	t	P
Mean Social Quotient	Stand. Dev.	Mean Social Quotient	Stand. Dev.	in Means		
79.05	7.98	98.97	12.25	19.92	5.28	less than 1%

TABLE XXXII

SPEECH DEFICIENCIES IN SIX AND EIGHT YEAR OLDS

	Six Year Group		Eight Year Group		Total Group	
	No. of Children	%	No. of Children	%	No. of Children	%
Institution	16	80	4	20	20	50
Foster Home	4	20	4	20	8	20
	$Chi^2 = 14.40$ P less than 1%		$Chi^2 = 0$ P 100%		$Chi^2 = 7.93$ P less than 1%	

even after several years in the community, represented a continuing manifestation of early isolation. Obvious speech defects were not conspicuous in the eight year group; but it was felt that differences between the two groups might still have been found if more skilled speech analysts than the caseworker observers had been used.

The present study is of an older group than the previous one employed. A general estimate was made of speech, in which factors of fluency, enunciation and rythmical organization were considered. Poor speech generally referred to awkward speech which was lacking in fluency and showed errors other than those that might be classified as community errors. Average speech required only slight speech training, showed normal, rythmical fluency and very few errors in articulation except as the latter represented community patterns of speech. Fluency was rated separately and the diction errors in each child's speech were recorded. (Tables XXXIII, XXXIV, XXXV)

Only 20% of the institution children show average or better speech, in contrast to 93% of the foster home children. The speech of the institution children is thus more inferior to that of the foster home children even as late as adolescence. The institution children are also inferior in regard to fluency of speech, and as might be expected more institution children show diction errors.

The diction error which is most conspicuous and most characteristic of the institution children is a general laxness or loose enunciation of sounds. More specifically, they show more errors involving omission and substitution of sounds.

It is a matter of interest that the three institution children who show average or better speech nevertheless give subtle evidence of atypical speech in their tendency to use "malapropism" and a general trend to misuse words. (For example, one child used the word "insignature" for insignia.) In these children one observes an exaggerated attention to enunciation and a tendency to speech am-

TABLE XXXIII

SPEECH—DICTION ERRORS (A)

	Institution		Foster Home	
	No. of Children	%	No. of Children	%
Diction errors present	12	67	2	13
No diction errors	3	63	13	87

$Chi^2 = 13.34$ P less than 1%

TABLE XXXIV

SPEECH—DICTION ERRORS (B)

Errors	Institution No. of Children	%	Foster Home No. of Children	%	Chi^2	P
Omissions	4	27	0	0	4.60	less than 5%
Laxness	11	73	1	7	13.88	less than 1%
Additions	0	0	0	0	.00	100%
Lisp	4	27	1	7	2.16	between 10% and 20%
Substitutions	8	53	0	0	10.92	less than 1%
Stammer	1	7	0	0	.64	between 30% and 50%

TABLE XXXV

SPEECH (C)

Rating	Institution No. of Children	Institution %	Foster Home No. of Children	Foster Home %
Fluency				
Very good	0	0	2	13
Good	0	0	3	20
Average	2	13	6	40
Poor	8	53	4	27
Very poor	5	33	0	0
General Estimate				
Very good	0	0	2	13
Good	1	7	2	13
Average	2	13	10	67
Poor	11	73	1	7
Very poor	1	7	0	0
Fluency				
Average or better	2	13	11	73
Below average	13	87	4	27
$Chi^2 = 9.00$ P less than 1%				
General Estimate				
Average or better	3	20	14	93
Below average	12	80	1	7
$Chi^2 = 15.92$ P less than 1%				

biguity and affectation. Two of the three children are twins who had always lived together. At one time, all three had demonstrated defective speech; but in their foster homes, there had been unusual emphasis on the overcoming of speech errors. Yet, the final outcome still hints at speech inadequacy. The particular affectations and ambiguities that are noted are in accord with the unique type of personal pathology which will be discussed in greater detail later. It is as though the speech deficiencies cannot be overcome in any fundamental way, and the child is making an ineffectual effort to create the impression of superior speech.

Conclusions and Theoretical Implications

The definite and conspicuous dissimilarity in personality traits between institution and foster home children provides a significant illustration of the interaction between the inner potentiality of the individual child and the acculturation processes in the development of children. In a child's manipulation of the material and human objects of his universe, one observes developmental tendencies and predispositions that appear to be innate in character. Yet there is little doubt that in the realm of social and emotional behavior and in that of mental organization, cultural impact has profound effect on the direction, the sequence, and the complexity of the child's growth. Indeed, cultural deprivation or the absence of external stimulation appears to result in a primitivization of the individual's behavior. Following Lewin's theoretical constructs, the personality of the institution child who has been markedly deprived in infancy, is less differentiated than that of the foster child. He is more given to simple, unrefined, diffuse, unrelated or perseverative modes of adjustment. In the realm of mental organization, the more infantile plane of differentiation is reflected in the greater aimlessness of behavior, the greater preponderance of trial and error adjustment, the greater tendency to thoughtless, wasteful, non-reflective, situationally determined response. In the area of emotional organization, it is reflected in poverty of affective response, and the meagreness which is characteristic of the child's personal relationships.

The early impoverishment of the institution environment not only influences the child's mode of adjustment, but affects the living content of his mental existence and the specific tools and skills which may have direct bearing on his mode of adjustment. For example, the institution baby has come to the community with a minimum of language,

vocabulary and information. The infinite number and variety of experiences open to a child living in a typical home and community are absent in the institution. In addition, because of his isolation from adults, the institution child is severely retarded in language, has a much narrower vocabulary than his community brother, and tends to mispronounce the words he is familiar with. More significant than the specific lacks in information and language, however, is the fact that the limitation in a specific skill such as language tends to restrict the child's intellectual capacity, for it is now commonplace understanding that language and general information are active tools of thought.

This gap in mental content and language skill is not overcome in spite of transition to a normal community experience. The adolescent whose infancy was in an institution not only persists in manifesting general intellectual and emotional immaturity in comparison to the foster home child. Strangely, he remains more retarded in all areas of language and speech in spite of a long period of ordinary school, family and community experience. This restriction in capacity for change appears to be related to the passivity and apathy of his total make-up. Passivity of response may become an active factor in the retardation of language growth and indeed in the general accumulation of learning for it is axiomatic that if a pupil is to learn, intent and desire to assimilate one's experience are prerequisites. This motivation and ambition are absent in the institution children.

How can we account for the generalized passivity of the institutional child? The explanation is probably to be found in his highly routinized existence during his first three years. This existence can be characterized as uni-directional in that a major portion of the child's behavior during the day was dictated by group routine. The complicated interaction and, more particularly, reciprocation between adult and child, so typical of family upbringing, was absent. In the family, greater recognition is given to the child's own reaction tendencies and he participates more actively in the establishment of his own life routine. Experience verifies that from the earliest weeks, the baby in normal family circles is more than a "plant". He not only responds to environmental stimulation but does so with active and conscious expression of his own feelings and desires, both positive and negative. The will to meet, consider and reorganize the world of experience, is a life quality which is dynamically created and encouraged by the unending attentions of the parent person to the individual child. The child is also actively encouraged to express his own unique will and even to reform his environment as well as to be influenced by it. As babies, however, the institution children had all been members of a group of 15 to 20 children under the supervision of one nurse. The social atmosphere for them, therefore, was one which from earliest infancy favored conformity to group routine. The mutual consideration by the child and a close, ever present adult of the many detailed problems of his existence was lacking. It is this plant-like atmosphere which, therefore, may have operated to produce the passivity of the total personality of the institution child.

The personality of the institution child has now been characterized as (1) meagre and undifferentiated, and (2) as passive or apathetic. Does the institution child's behavior permit us to infer a strong inhibitory process? The answer lies in part in an understanding of the normal growth process and the particular manner in which differentiation of behavior occurs. Differentiation represents a movement from large, diffuse, unfocused responses of the person, to goal determined, limited, precise and consequently efficient modes of response. It is apparent that if differentiation involves a growing adaptation along more precise, more accurate lines, this can only be effected by control or inhibition of irrelevant movement and impulses.

It is probable that the undifferentiated, apathetic personalities of the institution children stand in direct relationship to a qualitative and quantitative deficiency in the general inhibitory process. This is reflected in the institution children's greater tendency to aimless, unreflective behavior, to brief persistence and minimal ambition in the solution of problems, to their more frequent characterization by problem behavior involving hyperactivity, restlessness and inability to concentrate, and to their greater tendency to lose sight of and to violate prohibitions. At a younger age the institution children give more obvious evidence of uncontrolled response in the emotional and social areas(4). Aggressive reactions are more common and the children

are more frequently characterized by lability or instability of emotional response. Following the early institutionalization, experience in a foster home does stimulate the development of some degree of control which is essential if the institution children are to continue to live in the community. The obvious aggressive social reactions are no longer present. The deficiency in personal inhibition still evidences itself, however, in an overflow into the less conspicuous but equally symptomatic type of aimless, restless behavior described above.

Nor, after foster home placement, is the inhibition of grossly unacceptable behavior and impulses in the institution group accompanied by a developing love for other humans and a growing capacity for participating in varied and deep human relationships. Indeed, restricted capacity for effecting ties with other people is typical. This extreme difficulty in meeting adults on a meaningful, reciprocal level in adolescence is not a sudden development but is to be related to the early years when strong anchors to specific adults were not established. The abnormal impoverishment in human relationships created a vacuum where there should have been the strongest motivation to normal growth. For if normal differentiation and enrichment of personality are largely a function of developing control, this control can only be effectively and constructively stimulated by the child's deep interest in and identification with adult persons caring for him.

The absence of human ties, particularly the absence of relationship with protecting, loving adults, and a confused grasp of himself in relation to others, leads to personal insecurity. The institution group is consequently characterized by a need for attention and affection. Yet the never sated craving for affection is accompanied by the inability to set up a mature give and take relationship. The result with the younger institution children is extreme, attention seeking problem behavior, combined with hostile, overtly aggressive acts.(4) Eventually, however, the contradiction between the hunger for affect and the inability to respond to normal relationship causes the institution child to resort more consistently to a defense of emotional isolation, resulting in apathetic social responses and a pattern of personal non-involvement in life tasks which ordinarily are accompanied by feeling reactions.

Under normal circumstances, early dependency becomes the constructive basis for the development of a growing and secure sense of independence. In other words, independence is a positive and mature adaptation based on secure grasp of the self in relation to other people. This is to be differentiated from the isolation reaction of the institution group, for the latter reaction represents defensive adaptation to a confused, hazy, and thus fearful grasp of one's relationship to the world of people and things as well as to inadequate methods for meeting reality.

Finally, the fact that the personality distortions caused by early deprivation are not overcome by later community and family experience must be stressed. There is a continuity of essential traits as late as adolescence. If anything, there is a growing inaccessibility to change. The final trait, therefore, that may be attributed to the institution group is a rigidity of character formation.

It is probable that the degree of deprivation experienced in infancy by the institution children and the unique personality traits developed by them are rarely observed in other sections of the child population. Typically, the more common danger facing the infant in the family is that of active rejection by one or both of the parents. Deprivation or the absence of stimulation is to be distinguished from rejection. The latter may or may not involve a factor of deprivation as I have defined it, and more generally implies severity and cruelty of early handling by parents. Deprivation eventually appears to result in paucity of feelings and emotional response; while rejection may produce, firstly, a complex emotional existence revolving about the core feelings of not being wanted and, secondly, social responses in which the child directs toward others the hostility that he has himself experienced. Yet, even while undergoing the harrowing experience of not being wanted, the child is in contact with adults and is interacting with them. In addition, the rejecting parent is usually mixed in his or her feelings so that the child is left with some capacity for relationship and an active, if hostile feeling life. One might hypothesize that where rejection manifests itself in minimal adult contact and consequently marked

deprivation and neglect from early infancy, a personality such as that demonstrated by the institution children is likely to result. The need for fuller study of deprivation as differentiated from rejection in children living within family groups is indicated.

In addition, the personality, behavioral responses, and test patterns of the institution children are in many ways schizoid in character. Note particularly the limited human contact, the more general apathy and lack of ambition, and the near complete absence of abstract performance.* There would be value in determining if within the schizophrenic group there are some patients with background of early neglect similar to those of the institution children. A similar study of defective children is indicated.

In summary, it would appear as though the early group experience of the institution children was psychologically a highly isolated one. The emotional and intellectual deprivation resulting from the absence of adults produced a series of distinctive personality traits. These children continue to be different from a group of children with continuous family experience (even as late as adolescence and even after a long period of foster family and community contact). They remain less well adjusted to the demands of the community group, more simple in their mental organization, less capable of making reflective or complex practical adjustment as in school, and, most important, less capable of normal human relationships. A general theoretical formulation has been attempted. More important, however, the specific implications for the field of child care are thrown into bright relief. All the institution children were reared in early infancy in what the field of child care has regarded as one of the better infant institutions. It is unlikely that other institutions have been supplying a more personalized type of care. We are in a war period when the need for infant care will be growing. The possibility is meager indeed for securing a larger and better trained institution personnel than in peace time. We can only emphasize that there must be concern with the permanent harm to children that may be produced by infant institutions as they are organized at present or likely to be. Those forms of child care, such as foster home care, that permit maximum environmental stimulation and contact with adults should be given more serious community consideration than they have in the past.

* The Rorschach and Graphic Rorschach results suggest a similar possibility. As noted, this will be elaborated in another paper.

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CHILD DEVELOPMENT AND THE CURRICULUM: SOME GENERAL PRINCIPLES

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The propositions here set forth represent a preliminary orientation in what we may call the developmental approach to the understanding of children and the function of education. Some of the principles are familiar and obvious. Some of them will perhaps be questioned. The list is not exhaustive. For the sake of clarity, the principles are numbered. Some have more significance and wider practical implications than others. The order is partly logical, partly arbitrary.*

1. *Developmental Objectives.* Central to the developmental approach is the concept of *developmental objectives*—the goals, attainments or modes of behavior toward which the organism is striving in the process of maturing. These involve change, a process of becoming, increased capacity and scope in the exercise of powers already possessed and the emergence of new or modified lines of action and of orientation to the environment.

From a developmental point of view, educational objectives should be geared to, and, as far as is feasible, should be coextensive with developmental objectives.

2. *Levels of Maturity.* The concept of maturity does not simply denote an end product or a culminating point, but represents rather the level of development or degree of progression that a child has achieved at any given time or period in the growth span. Thus a young child, when viewed against norms or expectations for his age, or when viewed in terms of his earlier characteristics, may be more mature than is a child of 18 when similarly viewed against expectations appropriate for that age.

The educational program should be calculated to help the child at any stage of his career to reach his potential level of maturity. Similarly, the standards or expectations in terms of which any aspect of a child's development is appraised must, obviously, vary as children grow older.

This is recognized clearly in the establishment of norms covering such matters as intelligence, academic achievement, height, weight and a limited range of motor performances. It is not recognized so clearly, and no adequate norms have been devised, in other important areas involving features such as emotional behavior; competence and interest in social dealings with others; competence in everyday skills involved in self-help, mechanical ability, routine chores, personal safety, useful services, and the like; and in certain intellectual operations, other than those measured by mental tests or achievement scales, which figure largely in the exercise of what in ordinary language we designate by terms such as judgment, prudence, resourcefulness, persistence, initiative, sense of responsibility, common sense, and horse sense.

3. *Differential Rates of Maturing.* Various abilities and features in a person's make-up mature at different rates and approach their maximum at different times. For example, the average girl has reached her maximum height well in advance of the time when she has reached her maximum mental ability as measured by certain mental tests.

4. *Variability in Rate of Maturing.* This is an aspect of the familiar fact that individuals differ in their rate of development and in their ultimate status.

5. *Variability in Differential Rates of Maturing.* Children differ not only as indicated in No. 4 above, when compared with respect to any characteristic, but they differ also in the degree of maturity they have achieved in one aspect of their make-up as compared with another. For example, one child at sixteen has reached his maximum stature but still is on an intellectual upswing. Another child of similar age has tapered off sharply in his intellectual growth while still continuing to grow in stature. A third has reached near to his maximum on both counts.

The educational implications of individual differences have been recognized for several

* This paper ties in with a larger project, with which the authors and several colleagues are associated, designed to formulate in some detail the implications of findings in child development for the curriculum.

decades, but largely from the standpoint of differences in mental ability. Attention solely to mental differences obviously may fail not only to take adequate account of differences in other characteristics but may actually do violence to other aspects of a child's make-up, as when a child spends his entire school day in the company of pupils who are similar to him in mental age but decidedly less mature than he in bodily size, motor ability and social interests.

6. *Differential Developmental Preeminence at Various Stages of Growth.* Although development is continuous, there is variation at different levels of maturity in the degree to which given aspects of development or modes of behavior are preeminent as compared with others. There are times when the energies and the attention of the individual concentrate, so to speak, on the establishment of a given feature of his physical make-up or his behavior repertory. For example, certain aspects of physical development have a preeminence at puberty which they did not have at an earlier time. Again, granted a given phase of neuro-muscular development in the motor sphere, the business of learning to walk will, for a time, be a matter of preeminent concern.

We have here a phenomenon analogous, in some respects, to the legal principle of eminent domain. The developmental concern that is at the fore exercises superior dominion, for a season, over other properties within the organism. Sometimes, when this occurs, there may be a slowing or even a seeming retrogression in other areas. While he is absorbed in walking, the child may for a time show little progress in language, or in the control of elimination; he may seem to be more "infantile" emotionally by reason of angry crying in response to frustrations imposed by his own limitations or the demands of others; he may mark time in his social development.

The principle of developmental preeminence of different features at different stages of growth is most easily illustrated by examples from early childhood and from adolescence. With added maturity beyond the early childhood years, and with the widened scope of interests and activities that come with added maturity, the phenomenon tends to be obscured by the countless details that are involved in the larger context of growing and living. Moreover, the outlines may be blurred if not one but several concerns happen contemporaneously to come to the fore.

A thorough exposition of the principle here under discussion would require lengthy treatment, and it would also run into certain difficulties. As noted above, the workings of this principle are sometimes obscure. This may mean that the principle itself is wrong. Further work on the project for which the present discussion serves as a preliminary orientation may prove that the principle is wrong or has only limited application. However, in the opinion of the writers a principle such as the one now under discussion, or something similar to it, must come into play if we are to find an answer to some of the baffling questions that arise when we seek to plan a curriculum that is geared to human growth.

As soon as we begin to make a design for a curriculum at the elementary school level, for example, a thousand and one worthy undertakings compete for attention. Some will argue that certainly the child should acquire certain tools such as reading, writing, spelling, mastery of numbers, etc., etc. Again, we may urge that he should be oriented intellectually in his community and in the larger affairs of the world. Others may add that he should have the beginnings of vocational training; he should be introduced into some understanding of the world of industry and technology; he should acquire some understanding in the fields of nutrition, health, safety, etc.; he should acquire a wide repertory of everyday skills that would enable him to stand on his own feet to an extent appropriate to his years, and that would enable him to serve as a useful member of the family and of the community. Moreover, the argument might continue, he should acquire skill and appreciation in the arts, in music, in beauty; he should properly advance in morals, in citizenship, in all the virtues; he should grow in discernment and discrimination; he should acquire the rudiments of scientific methods in his experiments with things and in his thinking about things; he should become a lover of nature, a budding naturalist, a lover of his country, a devotee of Democracy, a creature who has clearly defined purposes, who acts on thinking; withal he must be a creature who has achieved balance between the various aspects of his make-up; harmony between his inner impulses; intelligent and friendly interaction between himself

and others; and a sublime and smoothly lubricated integration of all that he has learned and all that goes into the making of his personality.

The foregoing represents only a few of the many demands that might be addressed to the school program. In addition other issues intrude themselves. From one quarter comes the demand that if any or all of the above matters are comprehended in the curriculum, it should be in response only to a "felt need". If the curriculum maker is not already floored, let him also heed the admonition that everything he provides for the child should be governed by the concept of "readiness". He should not put the child into the position of failing to achieve or devoting undue effort to achieve something which the youngster could take in stride if given a few more months or a few more years in which to grow.

Each of these demands and admonitions is worthy in itself, but they leave the curriculum maker in a dazed condition. What shall be the basis for selection and emphasis? What shall govern the rationing of the teacher's time and energy, and expenditures for facilities and equipment? The full logic of all these conditions and demands would be to close the schools and send children out to learn in the world at large, for it is only with the whole world as his seat of learning, and with parts of Heaven thrown in, that all the conditions could be satisfied. Since this solution would not be practical for children and would not be acceptable to parents, we are thrown back upon the schools. This means immediately that we must narrow the field and that we must be selective no matter how free and flexible our program is to be.

Perhaps we should touch further on the two propositions regarding "felt needs" and "readiness". The doctrine of "felt needs" leaves many questions unanswered. Leaving out of consideration the curious distortion of a respectable psychological term which is involved in the use of the label "felt needs", we have the fact that many of the "needs" or conditions necessary for wholesome development are not "felt" by the child in the sense that he is consciously aware of a want, lack, problem, goal, purpose or anything of that sort. Apart from this, much of what comes under the heading of "felt needs", as that term is commonly employed, represents something the child has learned to "need". With different provisions and opportunities the same child might have acquired quite another "need". The answer as to what specialized "needs" the educational program should help children to cultivate must be found not in this or that capricious turn of events, but in a study of the growing potentialities of the child himself, considered in relation to what the educational environment affords and in relation to pressures within the social environment.

Findings associated with the concept of "readiness" show, in connection with a number of performances, that training or the offering of opportunities for the child to practice on his own accord is either futile or uneconomical until the child has gained the requisite capacity through the inner process of maturation. Findings that are available to date go farther toward telling what not to teach at a given stage than in telling us what we should teach at a given stage. If, for example, we find that a child is not "ready" for reading or for riding a bicycle or for throwing a ball in a given manner, it is quite clear that we should not press these matters. However, if the findings show that the youngster is at least partially "ready" in the sense that he can make progress, such findings do not in themselves tell us whether we should try to accelerate his progress in a given sphere of learning, or whether we should wait until the child has matured further and would be able, in less time, to make faster progress. Moreover, if the findings show that the child quite definitely is "ready" for a number of different activities, such findings do not in themselves tell us which of these activities should be especially nurtured and which should not.

This problem becomes particularly pressing during the late preschool period and during the elementary period when children are capable of entering into a vastly greater range of activities than the time and facilities of a school can afford. Here again we are faced with the necessity of choosing from among all the possible lines of action the ones that will be most fruitful. The answer as to how this choice should be made must be found through a study of the child himself.* What is happening in him? What is central or pre-

* We are speaking here, of course, of choices within the range where choice is possible. At all age levels there are certain inescapable demands or necessities in matters of safety, health, and limitations imposed by the physical and cultural environment.

eminent in the child's own development at this particular stage? What modes of behavior are especially in process of being established? What notable adjustments to the cultural, physical and social environment are now in process of being established? Where is the present emphasis, so to speak, in his own growth?

7. *"Wholeheartedness and Gradation".** Related to the principle of preeminence above is the further principle that in the process of establishing a new or a changed mode of behavior a child may, for a time, seemingly overdo or exaggerate the behavior in question. There may be an appearance of extravagance or excess in his "all-out" absorption. With the passage of time, however, the behavior becomes less all-absorbing or comes to fit as an integral feature of a larger behavior system. Walking, which for a time absorbed the child as though it were an end in itself, eventually moves away from the center of the stage as the child goes on to other ventures in which walking serves as a means of getting from one place of interest to another. Similar manifestations of wholehearted absorption can be noted in connection with various features of a child's social development, as for example in the child's seeming overdoing of resistance and stubbornness as a phase of his development in getting along with others, and also in connection with his intellectual progress. He plunges, for example, into the newly-found world that is opened up to him through reading, radio programs, and the like.

The phenomenon of transient wholeheartedness can be observed in the work of children at school, but usually the phenomenon is not so apparent in school as in the child's out-of-school life. The confinement imposed by the school, the presence of adult teachers and the leveling influence of being with many other children, whose enthusiasms of the moment may not be synchronized with his own, have the effect of inhibiting or moderating preoccupations which the same child may exhibit freely with a few chosen companions outside of school or in his private life at home.

The impact of this phenomenon is perhaps most significant in the home where it frequently gives parents a good deal of concern when they see the child, for example, going through a phase of exploring and tampering with his environment with assaults on shelves, drawers, closets; or see him go through a period (usually quite long) of addiction to certain types of treatment in radio programs, movies and the comics; or see him pass through a phase first of seeming indifference or hostility to girls, followed by a phase when he may be so preoccupied with girls that he seems to be neglecting other interests.

8. *Indigenous Motivation or Spontaneous Use, as a Feature of Growing Ability.* Associated with the development of a capacity or power is the impulse to use that capacity or power. An organ or set of organs that *can* function will, so to speak, strive to function. We can see this in connection with the neuromuscular systems involved in various manual and locomotor activities. At appropriate stages of his development the child sits alone, tries to stand and walk alone even if there are no ulterior ends to lure him on. We can see this, also, in connection with the development of the brain and the capacity for intellectual operations that distinguish man from lower animals. In due time the youngster goes through the various processes of language development; he babbles and articulates and "practices" vocalizations and verbalizations even if there is no one immediately present with whom he might communicate. With the development of perception and discrimination, he explores his visual, tactual, auditory and gustatory environment. His exploratory and verbal activities are combined, in time, to give vent to curiosity through a barrage of questions. At an early age he shows an appetite for intellectual things much as he shows an appetite for using his limbs, or for satisfying his desire for food, or, at a later stage, cravings of a sexual nature. In like manner, he exercises capacities and growing potentialities in the social and emotional spheres. He explores the social environment. He exercises his capacities for emotional feeling and expression. He may even maneuver himself into a position where he can safely experience supposedly unpleasant emotions such as anger and fear, even though usually these emotions arise through circumstances that are not entirely of his own choosing.

According to this principle, motivation is coextensive with the full repertory of a child's vegetative needs and his capacities in the in-

* The quoted wording here is taken from Hollingworth who used this characterization to describe changes that take place in emotional development.

tellectul, motor, social and emotional spheres. This does not, of course, mean that a child who possesses any given potential ability will forthwith take all steps necessary to bring this ability to fruition. Environmental opportunities and pressures and the competition of other activities, as well as many additional factors, come into play. The discrepancy between what a person is able to do and what he might be able to do is too familiar to require elaboration at this point. Moreover, the phenomenon of a child possessing a good mind but not enjoying the kind of intellectual work he is called upon to do at school, or possessing a good voice without seeming to have much incentive to cultivate it, or of being able-bodied without acquiring various motor skills, likewise is familiar and testifies to the fact that we cannot expect the principle of spontaneous use to operate unassisted in all circumstances.

This concept of motivation embodies the same positive and progressive features which can be seen in the broad picture of development. For this reason it also offers a positive and progressive orientation for education. It recognizes that human behavior consists not simply of trying to get away from something, but also is moving toward something. It does not see an educational program, or, for that matter, a program in mental hygiene, as being essentially a program based upon the idea of frustration, inhibition, repression and the like. It recognizes, obviously, that the blocking of any motive, whether it be sex motives of adolescence or a passing impulse to put on one's own shoes at the age of three, may have various consequences. In a world that does not revolve solely around each child, frustration and conflict are, of course, inevitable. Moreover, when such conflicts have produced persisting dislocations or "maladjustments", it obviously is the obligation of education to try to help. But this developmental concept of motivation does not see the "dynamics" of human behavior as being primarily exemplified by the individual who is seeking openly or blindly to cope with frustration, repression and conflicts of various sorts.

The concept of motivation as an integral feature of the development of a person's potentialities and powers has many educational implications, and it raises also many problems. On the negative side, we have already noted that the blocking of motives may lead to conflict and maladjustment if no other solution can be found. Such blocking may, of course, arise through many channels. It may come through unwholesome gaps or lacks or hardships in the child's environment, and, notably in the case of younger children, through lacks in the emotional environment afforded by his elders. It may come by way of an imbalance in the child's own makeup by reason of hereditary or environmental influences. It may come by way of forms of restriction and regimentation that are inevitable or that go beyond the justifiable demands of safety and social welfare. It may arise also through needless thwarting of the child's own impulse to grow: here, among other matters, would come conditions that restrain a child from exercising his capacities for increasing independence and self-direction, or that restrain his impulse to explore or experiment, or to discover, as far as his mentality will permit, the reasons for things he is called upon to do and not to do.

This principle presents quite a challenge in connection with all the enterprises at school that are designed to help the child to learn. According to this principle, the normal child has not only the capacity to learn, but also, indigenous to this, an appetite for learning. Given an opportunity to exercise this appetite, the child will go willingly, not to say eagerly, to school (subject always to the reservation that even the best school situation must compete with learning situations that an enterprising child can find outside of school). As against this expectation, we have the familiar spectacle of large numbers of children of statutory school age not caring for the school offering in its entirety, or parts of the offering, and the similar spectacle of children beyond statutory school age leaving school as soon as they are free to do so, even though there still is much they should be able to gain.

Obviously, many factors are at play here. It undoubtedly would be impossible even under the best conditions to devise a school program all features of which would enlist the enthusiasm of all pupils. Apart from this, however, the matter of enlisting the interest of the majority of pupils is complicated by many circumstances such as the difficulty of adjusting conditions to pupils of varying ability, the problem of providing a program that is challenging without being boring to some

and too difficult for others, the problem of the length of the school day, the length of the school week, the length of the school year. Moreover, the appeal of the school program, whatever the offering may be, will be influenced decidedly by the personality of the teacher.

Educators have long subscribed to the view that learning proceeds best if the child is interested, but children's interests present baffling problems if we view them as entities in themselves without regard for the larger context from which they emerge. This is especially true as children become older. Generally speaking, the younger the child, the closer is the relationship between what he likes to do and what he is able to do, but as he grows older and abler, there is more and more room both for choice and for chance. We see this illustrated, for example, in the motor sphere. When the child first is able to begin to walk, the only thing available for him to do, so to speak, is to walk. The choice is quite simple. On the other hand, at a later stage of his motor development, the youngster will be able to do a number of different things, but what he happens to do will depend, to a large degree, upon what the environment happens to afford. So, potentially he has the ability to rest on one knee on a coaster while he propels himself with the other leg, or the ability to learn how to ride a bicycle, but he will do neither of these things if no coaster or bicycle is available. Similarly, whether or not he acquires skill and interest in a host of other performances, such as swimming, skating, baseball, carpentry, etc., will depend upon circumstances, including, among other things, the customs that prevail among his peers.

The same holds true in connection with intellectual activities. The child has a mind and has the impulse to use his mind, but the particular projects which he undertakes will be influenced by factors other than merely the possession of ability. As a result, at a given stage a child's interest in this project rather than in that project may be quite fortuitous. The child who professes certain specific interests might have acquired another array of interests if circumstances had been different. In other words, the business of education is not simply to exploit interests that happen to be displayed but to help the child to acquire interests that will be most worthwhile. The worthwhileness of an interest cannot be judged by viewing it in isolation; it must be judged in terms of the way in which it fits into the larger pattern of the child's growth.

We have, then, this situation: while education should count upon an impulse toward use as an integral feature of the development of capacity or potential ability, it is the responsibility of education, increasingly as the child grows older, to find the best channels through which such impulses might flow. In exercising this responsibility, educators must weigh particular interests against larger aspects of the child's present and future welfare. In so doing, the educator can also properly capitalize on the fact that where there is potential ability there also is potential interest, that a child can learn to like to do anything that he is able to do and which offers a continuing challenge to his energies.

9. *The Principle of Anticipation.* Throughout the period of growth the process of development, while serving the demands of the present, constantly involves preparation for the future. The changes which occur in the course of growth have a forward look. The functions and capacities that are manifest at any given stage of growth determine the behavior of the organism at that particular point, and also establish the foundation for developments that lie ahead. The reverse of this principle can be stated in the proposition that everything that we find in a person at any time during his career has its roots in the past.

This principle and its companion proposition can best be illustrated if we look backward from the late adolescent stage of growth. The youth is now heading toward the achievement of certain objectives that will mark him as a competent adult. Such competence has many components. One component is the achievement of a degree of physical and economic self-support. This competence has been in the making almost from the time of birth through the acquisition of countless modes of behavior that enable the child, with advancing years, more and more to stand on his own feet and to pull his own load. Another component is psychological self-support. Competence in this area has been in process of development from the time, in early childhood, when the youngster first began to form opinions and to make decisions of his own, and it has also been in the making in the emotional sphere by way of progressive

changes through which the child moves from the helpless dependence and volatility of the infant to the degree of fortitude and control that is required of a person who no longer is a child but is capable of begetting children of his own. The principle of anticipation has been noted also in connection with certain psychological and physical aspects of the sexual processes involved in the ability to procreate.

In the field of education we often meet the question as to how far we should go in educating solely for the present as distinguished from preparation for future needs. Certain practices in the past have definitely had reference to the future. Children have been taught how to compute compound interest, for example, on hypothetical savings which they might, with good luck, possess some ten or twenty years in the future. Much of the emphasis on subject matter in the schools has been predicated on possible future use as distinguished from present use or demand. From time to time in the history of education there have been strong reactions against such practices, and properly so.

However, while it is proper to question the particular things that children are called upon to learn for the purpose of future use, it is not proper, from the developmental point of view, to discard training for the future as an educational principle. The child himself is heading toward the future. As we find him at any given time, there are features in his make-up that are manifest, but there also are features that are in process of becoming. Moreover, much that holds the center of the stage at any moment is the foundation for, or becomes an integral feature of, a future mode of life. A form of education planned solely with reference to the present would be out of gear with development and would do the child a disservice. This holds true all the more by reason of the fact, as noted elsewhere, that what the school affords necessarily must represent a choice from a vast array of alternatives. Granted such room for selection, it will be wisest, other things being equal, to choose activities that not only are suited to the child's present level of development, but which also will be useful at a later level of development. The demands of present significance and of future use need not at all be contradictory. Rather, in many areas they are complementary.

10. *"Laying By" or Shedding as a Feature of Development.* Development takes place not merely through the process of accretion, refinement of earlier forms of behavior or the emergence of new and different modes of behavior, but also through the sloughing off of features appropriate to an earlier day but now no longer useful. Some modes of behavior are lost or recede to the background through a process of being supplanted by more mature forms of behavior. Other modes of behavior are not actually lost, but seem largely to disappear through a process of moderation and refinement. An example of behavior that is superseded can be found in some of the early forms of reflex response. The new-born child, for example, shows a strong grasp reflex. With the maturing of the neural structures, the grasp reflex gives way to voluntary forms of prehension. Examples of behavior which recedes through a process of moderation and refinement can be found in expressions of emotion. Expressions that earlier were violent, gross and vigorous give way to more subtle forms.

The process of sloughing off can be noted also in connection with reactions that are "outgrown" through the effects of accumulating experience and added power. At a certain stage in his development of perception and discrimination, a child may, for example, be afraid of objects and conditions which previously were not differentiated in his experience, and which he now recognizes as arresting or new or different. With the further growth of understanding, more and more of what once was new or unfamiliar recedes into the realm of the familiar, with consequent dropping out of specific fears. Analogous developments may be noted in connection with anger and joy. Things that once appeared as a threat or as a form of thwarting or as a stimulus for joy are "laid by". Failure to progress with this business of "laying by" in the emotional sphere marks the child as emotionally "immature". In passing, it may be noted that much that goes under the label of emotional "instability" and emotional "maladjustment" in later childhood and in adulthood represents a form of emotional "immaturity"—the persistence of infantile forms of reaction that normal children have "laid by".

This phenomenon also appears notably in the motor sphere. The child of elementary school age, for example, engages with seem-

ingly boundless energy in a wide variety of specific forms of play which drop out with advancing years. In the process of being on the go, especially when with other children, he likewise plunges into much activity in the form of running, chasing, dodging, tussling, seemingly for its own sake or as a form of social intercourse. With advancing years there is a recession of such activity as the child's movements become more deliberate and as activities which he still retains are instrumental in or incidental to larger enterprises.

An important corollary of this principle of "laying by" is the one that follows.

11. *Developmental Revision of Habits.* Ordinarily we assume that the repetition of behavior which serves a purpose and which brings satisfying results will lead to the firm establishment of a habit. However, from a developmental point of view, this expectation is subject to very definite reservations. Repetition of activities appropriate to a given level of maturity does not, in itself, establish habits that will be carried over to a later level of maturity. Indeed, if no unwholesome factors intervene, the child will, without special prompting, spontaneously revise many modes of behavior that prevail for a time. For example, the young infant on a "self-demand" feeding schedule will, for some period of time, be fed upward to eight times a day. This, however, does not establish a continuing demand to be fed eight times a day. As a child grows older, there is an increase in his capacity for food intake at any one feeding. Steadily from week to week, albeit perhaps erratically from day to day, there also is a lengthening of the periods during which he sleeps without awaking, and a corresponding lengthening of the periods during which he is awake. Coincidentally with this, through a process of elimination and merger, there is a decline in the number of feedings which he demands.

A corresponding phenomenon can be found in connection with various aspects of the child's motor, social, emotional and intellectual behavior. Even if no strong repressive measures are brought to bear, the child, who at early preschool age did much forcible hitting and snatching in his encounters with other children, will, with the passage of time, substitute language more and more for physical techniques of conflict. The child who at a certain stage of his growth immersed himself in makebelieve will not, simply as a function of the time devoted to makebelieve, become permanently addicted to fantasy as he matures. The youngster who to varying degrees at various stages of his growth shows a short attention span in many of his enterprises will not, simply through the fact of frequently flitting from one occupation to the other, be barred from the establishment of good habits of concentration.

We could multiply examples of this phenomenon. Parents especially, and also teachers to some extent, would be spared much fretting, and children, on their side, would be spared from many repressive measures if it were more generally recognized that many forms of behavior which a child exhibits at a given stage of growth will not be perpetuated simply by frequent use. Granted his own good time, the child himself may become more intolerant of some of his earlier practices than even his elders had been. We see this illustrated notably in the field of radio interests. For a time many youngsters seem to be hopelessly addicted to radio treatments which adults regard as trashy and inane. A few years later the same children may violently criticize and disparage these very programs.

While general recognition of this principle in the many practical details of child rearing would add to the comfort both of children and their elders, it is also true that this principle leaves many questions unanswered. We need considerably more systematic research to tell us what are the forms of behavior which may be regarded as appropriate to a given stage of growth, and which the child himself will abandon or modify as he matures. Correspondingly, how can we identify "immature" forms of behavior that are likely to be established as lasting habits unless corrective or remedial measures are brought to bear?

Answers to these questions would solve a host of problems in the rearing of children at home and in the instruction of children at school. In the field of school subjects, spelling offers a good example. The usual child is able to communicate much in writing before he is able to spell a large percentage of the words that he uses in writing. A fourth grader, for example, may indicate in writing the names of fifteen favorite radio programs with sufficient approximation for an adult to be able to identify each program even though the

name of not one single program is correctly spelled. The same youngster will, with the passage of time, come to spell correctly many of these words which earlier were incorrectly spelled even though the words have not been singled out and separately taught. On the other hand, there are some youngsters who go astray, and who continue into adult years to be confused about their spelling. In order to avoid this event, there are teachers who treat spelling as an end in itself practically from the beginning. By so doing, they may divert time and energy to the spelling of many words which the youngster eventually, and apparently without special effort, would learn to spell anyhow. But the question as to how far we can trust the child to supplant earlier repetitions of incorrect spelling with the discovery of the correct spelling is an open one.

Spelling offers a convenient example, but we could raise similar questions with respect to almost every feature of the conventional school program, not only as regards the learning of specific areas of subject matter, but also as regards certain larger objectives such as improvement in capacity for sustained concentration, the establishment of good intellectual work habits, etc.

12. *Differentiation and Integration.* Development proceeds both through the process of differentiation and refinement of activities that earlier were features of a larger constellation, and through the process of combining of several activities into more complex operations. Stated in over-simplified form, there is progression both from whole to part and from part to whole. Actually it is difficult in theory to work out a definition of "wholeness" as distinguished from "partness" especially after the period of early infancy. Moreover, in a practical situation, a given operation may function under different circumstances either as a whole or as a part. In his first use of a wagon, for example, a child may devote his whole attention to simple pushing and pulling. Such pushing and pulling, for the time being, seems to function as a total or "whole" activity. Later, similar pushing or pulling may be only a "part" or component feature of an enterprise in which the child uses the wagon to haul materials in a make-believe game in which he is a delivery boy.

A. *Individuation.* According to one theory, the organism at first operates as a totality or as a unified whole. Movements in any segment or part of the organism are at first integrated with movements of the entire organism. The ability to perform an activity limited to a specific segment of the body is a secondary or a derived phenomenon. Coghill advanced this theory on the basis of studies of the development of movement in the salamander. According to Coghill's observations, movements of any segment of the body, such as the forelimb, are at first an integral feature of a larger movement involving the entire creature. The ability to move this same forelimb more or less independently represents a later phase. The term individuation has been used to describe this phenomenon. Findings in studies of other animals leave open the question as to whether Coghill's account represents a basic and universal principle, or offers a description of one of various ways in which behavior develops.

B. *Progression from generalized to more localized response.* During the first days of life some stimuli, if sufficiently intense, when applied to a given part of the body (such as pressure on one of the child's toes, or a pin prick applied to his arm) will produce not only reactions involving or directed toward the part that is stimulated, but involving also movements in other parts of the body. In time the response becomes more localized and specialized and more directly calculated, with an economy of movement, to deal with the stimulus through withdrawal of one limb and defense movements with the other limb, as distinguished from movements of a more diffuse character.

C. *Incorporation of separately practiced operations into larger activity systems.* Most of the complex skills used by children after the first three or four years of life do not represent simply a refinement of earlier prototypes of the same skills. Rather, such skills usually represent an organization of separate component operations, each of which may have a developmental history of its own and which may have been subject to varying periods of practice as a separate undertaking. In the child's make-up there is no prototype, for example, for the complex skill involved in riding a tricycle. This skill involves the integrated use of a number of different muscular coordinations which, organized in a different fashion and supplemented by other coordinations, serve the child in connection with a

number of other skills. Moreover, it is likely that the youngster has, at various times, given special attention to activities that later are component features of the operation of riding a tricycle, including not only the postural and pedal features that enable him to sit on the seat, keep his balance and propel but also a number of manual skills involved in holding the handle bars and in steering the vehicle. Indeed, for a time the child may have spent many periods on end in which he did no more than to manipulate parts of the vehicle or push it back and forth quite in advance of the time when he was able to mount it. At various times he has drilled himself, so to speak, in operations that later proved serviceable in a more complex undertaking. Drills were not invented by stern school teachers. The usual child has been his own drill master in undertakings of his own choosing long before he gets into the hands of a teacher.

What holds true for tricycling holds true also for most other skills, motor or intellectual, that one could mention. Few if any of these are acquired by way of a gradual perfection and refinement of a "total" pattern that was there from the start. Rather they consist in combining, into a larger, more inclusive performance, operations which the child, at this or that level of maturity, has the capacity to perform. Moreover, from the point of view of his experience, what constitutes wholeness or partness is quite a variable matter, for the operation which now absorbs his full attention may in another and later situation be only an incidental or constituent feature of a different undertaking.

13. *Priority of "Large" over "Small" Muscular Activities in Certain Sections of the Body.* With the exception of a number of quite specialized responses that are ready to function at birth, and with the exception of certain activities which cannot readily be classified in terms of "large" or "small" muscle groups, it generally holds, with respect to the development of behavior, that voluntary movements involving the large musculature in a given part of the body are executed before the individual gains the ability to execute more refined movements. There have been various versions in the statement of this phenomenon. One pronouncement has been to the effect that development proceeds from the fundamental to the accessory. Another pronouncement that is educational in character, and which has received wide and uncritical currency, is to the effect that the younger the child is, the more should our provisions for his training utilize "large muscle" activities. Both of these pronouncements are partly true on the descriptive level, but neither of them adequately describes the developmental phenomenon involved, and the latter statement involves an educational slogan which, in many respects, is incorrect.

A formulation that more nearly squares with the facts of development can be found in two principles that have been set forth by investigators of early development. One of these embodies the principle of the *cephalo-caudal* direction of growth. The other embodies the principle of the *proximo-distal* direction of development. The proposition with regard to cephalo-caudal direction denotes the fact that, generally speaking, development of structure, and of forms of behavior which the structure underlies, is from the head tailward. Physically, the formation of the arms, which lie in the anterior or headward region of the body, is well advanced while yet the formation of the legs is incomplete. Similarly, the child is capable of controlled movements involving the arms while yet his legs are relatively inert or perform largely as a feature of gross bodily movements.

The proposition with regard to proximo-distal direction denotes the fact that the development of structure and function proceeds from the area nearest the central axis of the body outward toward the extremities. This is illustrated, for example, by the fact that movements of the arm that involve the entire limb appear before the child is capable of carrying out movements focalized, say, in the wrist, hand, or fingers, and involving the ability, for example, to use the thumb and forefinger in a pincer-like manner to pick up a small object.

In the light of this dual formulation, it can be seen that the proposition to the effect that development is from the fundamental to the accessory holds true to the extent that we interpret "the fundamental" to denote movements in the headward and in the proximal areas of the body. The principle that only "large muscle" groups should be called into play in the education of the child is quite undiscriminative and even misleading in the light of the dual formulation above. Actually,

as everyone who has observed a child knows, a youngster is capable of highly refined movements involving the fingers long before he is capable of what might be called "big muscle" activity of the lower extremities involved in the act of creeping or walking. In his own spontaneous play, the baby, long before he has skill in walking or running, will grasp and manipulate small objects with his fingers.

14. *Interaction Between Various Aspects of Growth.* While it is true, generally speaking, that growth is continuous and that the career of the organism as a whole is involved in the development of any feature of the organism, it also is true that there are features or aspects of growth that have their own developmental course and that proceed with a certain degree of independence. It is fruitful for the understanding of development, and also for practical educational purposes, to focus attention at times separately on various aspects or features of the larger total and to take account of ways in which a given feature of growth interacts with other features.

We may note, for example, that motor development takes a course which in many respects is independent of, and in other respects interlocks with, other aspects of a child's development. Thus, in the motor sphere the development of a feature such as walking takes a variable course in relation to features in the mental or social spheres, such as talking—one child walks well before he talks, another has progressed far in talking before he can walk. While recognizing such relative independence, we can also recognize how developments in the motor area vitally affect developments in other areas. Thus, motor development plays an important role as a vehicle for social development—throughout childhood, and especially in the preschool years, a child's social contacts with his peers are made to a large extent by way of common motor activities. Again, a child's motor development will have an important bearing upon emotional features of his behavior. The child who is backward in his motor skills will, for example, have occasion to be angry or afraid in the face of certain obstacles or threats which another child, by virtue of greater motor ability, would be able to handle in an unemotional manner.

In keeping with the foregoing, a developmental approach should sharpen the eye for factors or components that affect the larger total quite as much as it should sharpen our eye to the fact that the effect of any factor that touches primarily upon one aspect of a person's make-up may be influenced by everything that already is there.

15. *Vicarious Extension of Experience.* From an early age the child is able to encompass experiences that go far beyond conditions with which he has immediate bodily contact. His mind can traverse distances never covered by his legs and can manipulate many things never touched by his hands. This principle is rather obvious, and yet in the light of some of the emphases that have recently come into education it merits some emphasis.

In many areas of learning it is possible to make progress only through direct experience and through manipulation of the tangible environment. One cannot learn to ride a bicycle simply by being told or by watching someone else. However, there is much that a person can learn and can use on a symbolic level. If a child's education were limited only to matters with which he had direct personal experience, his mental life would be poverty-stricken indeed. It is not necessary that mental work always be accompanied by leg work. Granted some preliminary development of a concept of animals, a child can learn much that is interesting about elephants without actually having seen, and much less having been one. An enterprising three-year-old can have a large mental menagery of animals which he has seen only in pictures which later he can identify when he sees them in the flesh. To be sure, there will be more meaning and relish in the child's concept of an elephant after he has seen a real elephant, but to limit the child's knowledge of animals to what he can verify at the zoo or eventually to deny him knowledge about China unless he is able to go there and live would be a curious denial of human capabilities.

This does not constitute an argument for loading the curriculum with intellectual abstractions. As a matter of fact, an educational program geared to the child's development would, in the opinion of the writers, give considerably less stress to the learning of intellectual abstractions than now prevails in most progressive and formal schools, and would give considerably more stress to learnings that promote a child's emotional development and that promote his motor skills and competence in dealing with everyday practical

problems. But while stressing these matters relatively more than has been the case in the past we would still recognize that education geared to the child's intellectual development should not be restricted to what he can cover through trips, excursions, and the handling of tangible things.

16. *Early Establishment of Some of the Basic Features of Personality Structure.* Characteristics and qualities that distinguish each human creature from all others, and that go into the making of what we call his individual personality, are manifest in early infancy and tend to show a high degree of persistence and consistency with advancing years. This does not mean, of course, that a person's ways are "set" or have "jelled" once and for all at any particular stage of his growth. Changes come about through impact with the environment at all ages. Moreover, the repercussions of a given dominant trait or characteristic will vary at different maturity levels. The child who is conspicuously invasive or aggressive may find, for example, that this characteristic is tolerated by his elders and his peers to a greater extent when he is three or four years old than when he is ten or fourteen years old, and this, in turn, may have important effects on other aspects of his behavior.

While the principle does not imply, in other words, that various aspects of an individual's personality are predetermined either by heredity or by events that impinge upon a person during the first few months or the first year or two of life, the principle does imply that the characteristics that distinguish this creature from that are not at all like putty in the hands of circumstance. Not only is it true that dominant trends in what we call an individual's personality appear early and tend to persist, but it is also true that such modifications as occur with the passage of time will be relative to what was already there and will represent primarily a building up or a modification of traits already there, rather than the implantation of something new or different or foreign to the individual's earlier make-up.

Educationally, this principle carries with it the well-known injunction that we should respect the unique personality of each individual child. It also implies that our concept of the appropriateness of various forms of behavior should take account not only of norms derived from a study of large numbers, but also should take account of what is most fitting from the point of view of the larger characteristics of the individual. Thus, while we say in general terms that a child of preschool age should become "socialized", we will recognize that one youngster with a given cluster of abilities and inclinations properly and contentedly will be less gregarious and less absorbed in the social life of the group than another child with a somewhat different cluster of abilities and inclinations.

17. *The Play of Complementary and Potentially Conflicting Forces.* From the time of birth the child is moved in directions which, when viewed in isolation, seem to be opposed or conflicting, but which, when viewed in larger perspective, represent the play of forces that complement and support each other.

A. *Dependence — Independence.* At birth and throughout ensuing years the child is a highly dependent creature. Also, practically from the moment of birth he is striving for independence. On the side of dependence there is the fact that his very survival from day to day during early infancy hinges upon the care that others give him. Associated with, and as an outgrowth of this helplessness, he exhibits, with the passing years, a desire not only for physical support but also for psychological support. He seeks affection, he wants to feel that he belongs. Indeed, with the passage of time such strivings, especially if frustrated, may mobilize all of his emotional resources ranging from an expression of his own capacity for tender feelings to intense anger or fear. This desire for emotional acceptance by others, notably his parents, expresses itself in varying ways and with changing degrees of intensity as the youngster matures. There is a gradual weaning from emotional dependence just as there is a weaning from physical dependence, but throughout the growth span this dependence persists to a high degree even when the child's behavior may seem to belie it.

The youngster who thus is dependent also, as indicated, strives to be independent. In various ways as befit his growing abilities, he seeks to strike out for himself, to walk rather than to be carried, to roam at large rather than to be always under the parental eye, to do for himself, to initiate ventures of his own, to think for himself, and to act according to his own decision. Even under the

best circumstances there inevitably will be times when these two tendencies clash. The normal situation will be characterized by many stresses and strains, but parents, on their part, will be able to avoid the Scylla of rejection or the Charybdis of overprotection, and the child, on his part, will be able to strike a balance.

B. *Self-centered and "Outgoing" Tendencies.* From the time of birth each normal person exhibits an enlarging repertoire of modes of behavior calculated to promote his own individual interests, to exert his personal desires and to further and to protect what he comes to regard as his individual rights. Also almost from the time of birth the same creature exhibits an expanding repertoire of modes of behavior by means of which he defers to others and which characterize him as a creature who is socially able to "give" just as he individualistically also seeks to "take". On the one hand, the youngster, at various stages of his growth, cries and fusses and seeks attention without regard for the convenience of others, he passes through periods of strong self-assertiveness and resistance, he acquires the idea and patterns of behavior involved in competition, and in time he is definitely concerned about his own prestige. On the other hand, the same child, at an early age, goes out to others through manifestations of affection; with the passing of time he exhibits cooperation, sympathy, friendliness, loyalty. Behavior in both categories is equally normal and equally a product of "natural" and environmental factors. It would not be possible to define what constitutes a perfect balance.

The issue as between dependence and independence usually impinges to a greater extent upon the home than upon the school, although the school definitely also has a role to play by way of avoidance of overpaternalism or of practices or teacher-pupil relationships that have the qualities of over-protection or rejection, and by the promotion of skills which help a child increasingly to stand on his own feet. The issue as between self-seeking and "outgoingness" definitely impinges both on home and on school. It is properly the function of the school to provide opportunities for the child to cultivate his capacities for sympathy and cooperation. It is also properly the function of the school to provide opportunities for the child to learn ways of intelligent self-assertiveness. This means, among other matters, that the school will provide opportunities not only for cooperation but also for wholesome forms of competition. The latter, perhaps, need not be stressed, however, for in schools in the past there has, if anything, been too much competition; moreover, even if teachers, in the future, were tempted systematically to try to root out all conditions that might involve the children in competition, the youngsters themselves would find ways in which to compete.

Concluding Comment

Each of the above "principles", it will be noted, is stated somewhat arbitrarily and is here, for the sake of brevity, supported only by a few illustrations. Some of the principles are quite familiar, as stated, to students of child development; others are based upon findings which will readily come to mind even though the interpretation or generalization derived from the findings may, in some instances, have a somewhat unfamiliar ring. The findings and observations from which the "principles" have been derived stem from the labors of a host of research workers whose contributions are not here acknowledged in detail, since acknowledgment by way of a full bibliography would multiply the length of the paper many times. Yet to be completed and reported is the job of amplifying, testing, applying revising and supplementing these propositions through a detailed re-examination of some of the practical implications for education of findings concerning the developmental characteristics of children at various levels of growth.